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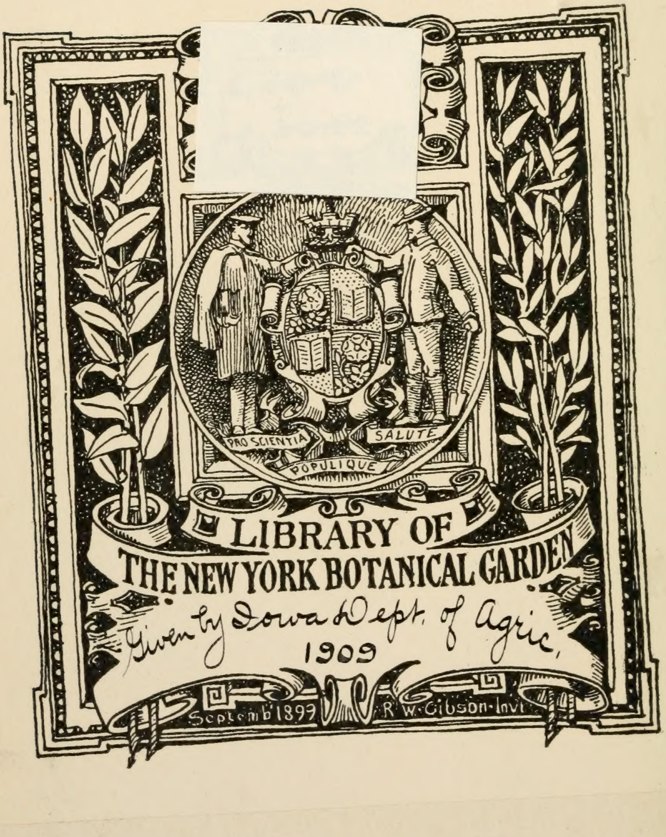
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First Secretary of the Iowa State Fair, held at Fairfield, 1854. Served twelve years as secretary, being for the years 1854–1855 and 1863 to 1873, inclusive.

THE FIFTH ANNUAL

# Iowa Year Book of Agriculture

ISSUED BY THE IOWA DEPARTMENT
OF AGRICULTURE.

CONTAINING

Proceedings of the State Farmers' Institute and Agricultural
Convention of 1904; Synopsis of the State Board and Com-
mittee Meetings; Crop and Weather Report; Proceedings
of the Iowa Swine Breeders, Iowa State Improved
Stock Breeders and Iowa State Dairy Asso-
ciations; Extracts from the State Dairy
Commissioner's Report and
National Dairy Union

AND

Papers on Live Stock, Agricultural and Miscellaneous Topics

ALSO

Early History of the Iowa State Fair, with Press Reports of the
First Iowa State Fair (1854) and the Fair of 1904; Awards
to Iowa Exhibitors at the Louisiana Purchase
Exposition; Statistics Relative to Farmers'
Institutes in Iowa

AND

Reports of County and District Agricultural Societies, Together
with Laws Governing Same.

EDITED BY
J. C. SIMPSON,
SECRETARY STATE BOARD OF AGRICULTURE.

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# LETTER OF TRANSMITTAL.

OFFICE OF
IOWA STATE DEPARTMENT OF AGRICULTURE,
CAPITOL BUILDING.

DES MOINES, IOWA, January 25, 1905.

To His Excellency, A. B. CUMMINS, Governor of Iowa:

I have the honor to transmit herewith the Fifth Annual IOWA YEAR BOOK OF AGRICULTURE, for the year 1904.

Very respectfully,
JOHN C. SIMPSON.
SECRETARY STATE BOARD OF AGRICULTURE.

# PART 1.

## STATE FARMERS' INSTITUTE—AGRICULTURAL CONVENTION AND PROCEEDINGS OF THE STATE BOARD AND COMMITTEE MEETINGS FOR 1904.

SELECTION OF SEED CORN—BY PROF. P. G. HOLDEN, AMES, IOWA.

### PROCEEDINGS OF THE ANNUAL MEETING OF THE STATE FARMERS' INSTITUTE, HELD IN THE ROOMS OF THE DEPARTMENT OF AGRICULTURE, TUESDAY, DECEMBER 13, 1904.

The meeting was called to order by the president at 10 o'clock A. M.

THE PRESIDENT: Gentlemen, please come to order. The first on the program will be the address of welcome, by the Hon. Joe S. Trigg.

### REMARKS BY MR. TRIGG.

*Mr. President and Gentlemen of the State Farmers' Institute*—The very pleasing duty has been assigned to me this morning of extending to you a few words of welcome in behalf of the State Board of Agriculture and the city of Des Moines.

We gather here this morning, representing the largest and most important interest which the State of Iowa possesses. It is difficult to estimate the wealth and the prosperity that lies behind the work, efforts and interests that you represent. Iowa for natural reasons, is and always must be an agricultural State. So large a percentage of the soil within her borders being susceptible of the highest development, she is denied what some other states possess—large forests, timber, lumber interests, and only a minimum of manufacturing interests up to this time. Even the very coal that is dug out from under the fertile farms of this State is used to generate power to drive the locomotives to haul the farmers' grain to market; is used to run the manufacturers, to manufacture his tools and farm implements, and to help warm his home. And so it is safe to say, that the over-shadowing, far above any interest, is farming and agriculture.

We meet this morning under especially favorable circumstances. The State has been unusually blessed the past year. The early and later rains which have fallen, and the genial sunshine, has resulted in bringing us abundant crops. True, for a time we were anxious; we feared, and the very question as to whether the corn crop would have time to mature, completely obscured all interests in the great question of American politics. If you would meet two men upon the street and learned what they were talking about, it would not be politics; it would be corn. That was true all over the State this year, and it is the cause for a good deal of gratitude to the Giver of All Good, that sufficient and abundant harvests have rewarded our efforts. We read of other countries where things are not so well; where people are suffering for food to eat, and when we sit down and count our blessings, I can not see how any man can fail to feel proud as a citizen of the State of Iowa, when he sees piled up there in the rotunda of the Capitol building the garnered wealth of the farm, the fruit from the orchard and the corn from the farm—a most interesting object lesson of what we are capable of doing.

We come here from the homes of Iowa because we want to. You men are not drafted to come here. Your motive to come today, I know, is a just one, and that is, having learned something of the splendid possibilities connected with science as applied to agriculture, you today are anxious for more. You would invoke this mystic agency and thereby display the productive capacity of the soil and your income at the same time. This is a splendid mission. I am sure that your gathering together here today can not fail but bring the very best results, not simply to yourselves, but as you depart from this place, you carry with you the inspiration that shall lift and prompt others to do better. Just think of it for one moment! The average crop of corn in this State this year is probably about thirty-three bushels per acre. I know of corn, and you do, that will go eighty bushels. Just think of the numerous possibilities for improvement! It is your opportunity, your privilege today, to so discuss these questions as shall carry this gospel of good agriculture, science and agriculture blended, back to the farm and there start a new interest, a new agricultural civilization.

The State Board of Agriculture and the city of Des Moines extend to you a cordial welcome. We are glad to see you here. Our city is large and good and great. The best citzenship of Iowa is not found in the large and extensive homes of the cities, but scattered all over the broad prairies there is being nurtured and developed the best citzenship of the State.

I trust that your meeting may be eminently pleasant and profitable, and that you will find your stay in Des Moines one of the happy occasions that fall to your lot. The city of Des Moines extends to you, gentlemen, a most cordial and hearty welcome.

THE PRESIDENT: We will now listen to a response to the address of welcome, by E. M. Wentworth, of Marshall County.

## RESPONSE BY MR. WENTWORTH.

*Mr. President and Gentlemen*—The becoming modesty that has ever clothed agriculturists requires but the simple acknowledgment of the cordial welcome tendered by Brother Trigg, and a return of an equally hearty ''We thank you.''

Yet, in accordance with the usual custom and expectation of something more, we are glad of the opportunity to recall our bounties and give expression to our personal good feelings. We also appreciate Brother Trigg's utterances, and we do not get ''puffed up'', because he is one of our number—the records of history, the reward of experience and the gift of prophesy, are his. He speaks agriculturally, and to agriculturists as one with authority. He is one of us; we are his chosen people.

Nothing he has said can express, nor can words of mine express our abiding faith in Iowa's future, such as fills the minds of her citizenship. There is little need of saying that Iowa had a particularly prosperous year. Consider it from every viewpoint, and the Iowa farmer today looks to the future with more confidence, in every sense, than he has for years.

Somewhere I have read—I don't know the author—I hope he was a Hawkeye; I believe he must have been—these lines, that I am glad apply to Iowa:

''Her hands are strong, her fame secure,
Her praise on lips whose praise is dear;
Her heart, her hope, her purpose pure;
The Queen of all the earth is here.''

The horizon is bright with the glow of dawn. We face the future without a fear. For years unborn, Iowa's wealth will be in agriculture and her farms famous. Touch elbows with opportunity; breed well, feed well, till well, live well!

There are no words that will fully express the real and actual value of our State; language fails when we undertake to do it.

''Grandly in her ample lap
Are annual harvests heaped sublime;
Earth bears not on her proudest map
A fatter soil, a fairer clime.''

Mr. Trigg, again we thank you on behalf of this metting for the cordial welcome which you have extended us. We have met with you for many years, and the warmth of your hospitality was never more cordial, nor your interest more marked, than during the past summer, when the citizens of Des Moines turned out so generally and aided to make the Fair a great success. We look forward to the future for still closer relations, and we believe the people of Des Moines realize, that the agricultural prosperity of the State is the safest basis for the business interests of the city to rest upon. Thus realizing, we expect in the future their full and free co-operation.

THE PRESIDENT: Before we proceed with our regular program, I want to say that after each paper or address, a reasonable time will be given for a discussion thereof, and any one desiring to ask questions may do so.

The next subject is entitled "Draft Horses," by H. G. McMillan, of Cedar Rapids, a gentlemen who is not an importer. but a breeder of draft horses and Shorthorn cattle.

## DRAFT HORSES.

H. G. M'MILLAN, CEDAR RAPIDS, IOWA.

The breeding of draft horses is rapidly becoming one of the most important as well as one of the most profitable branches of animal husbandry. Notwithstanding the advent of the electric car, the automobile and other inventions for carrying both passengers and freight, the demand for draft horses has constantly increased. In fact, the demand has increased much more rapidly than the supply and as a consequence prices for really first class drafters are higher than ever before known in this country.

The fear that draft horses would be superseded by electricity as a motive power has proven to be without any foundation whatever, statistics showing that notwithstanding the use of electricity and other motive powers, more draft horses are now being used in all the principal towns and cities, in proportion to the population, than ever before. This statement might at first be doubted but a little reflection will satisfy any one that this is true. It is only necessary to call attention to a few instances where draft horses are now being used by the thousands where not many years ago they were hardly used at all.

It is but a short time since the Standard Oil Company shipped practically all their product in barrels to the retail trade. Now this is entirely done away with, their oil being shipped in tanks to principal stations and delivered to all small towns and even to the farm house door with the best draft teams they can buy.

All the large packers now have refrigerator houses in the larger towns and deliver their dressed meats in heavy wagons to the retail markets. The brewers also have their refrigerator stations at all convenient points and deliver their product by teams in the same manner.

I might go on and enumerate other instances almost without end where draft horses are now being used in great numbers where ten years ago they were hardly used at all. In the draft horse business it is no longer a question of demand but a question of supply. Where are the drafters to come from now so eagerly sought by the buyers at all the horse markets? Never was there such a scarcity of good ones. While the trade in draft stallions has been active for the past four or five years and there are now many good ones scattered over the country, the supply of heavy mares is very limited.

The farmers who owned them sent them to market a few years ago because they thought the days of profitable horse raising had passed for all time. As a result of this unwise policy, before an adequate supply of drafters can again be supplied and placed upon the market, many draft mares will have to be bred and raised to produce them. It will necessarily be many years before the exigencies of the situation can be overcome and as a consequence the price of draft horses is certain to continue for many years at least and in all probability they will increase in price more rapidly than they have in the past few years.

Every farmer who has a good draft mare, or a pair of them, should breed them to the best draft stallion within his reach, for good draft colts are certain to be as profitable as any stock he can raise on the farm.

''While pure bred stallions have been selling in many cases at seemingly high figures, pure bred draft mares can yet be obtained at a very reasonable figure. The Iowa or Illinois farmer who owns one hundred or one hundred and fifty dollar land can not make a better investment than to buy a pair or two of pedigreed draft mares. At the price such mares are now selling, if given proper care, they will bring in a larger return on the investment than any stock that can be placed on this high-priced land. In addition to producing colts that the draft horse breeders and dealers will gladly buy at one hundred to three hundred dollars when a year old, they will do the work required on the farm just as well, or better, than mares that produce colts that are only worth a hundred dollars when fully matured. In fact, the draft mares of the country ought to be in the hands of the farmer instead of the larger breeders who can not make use of them for work and whose only profit is the value of the colts he raises.

''The farmer who works his mares stands a better chance to raise a good colt each year than the man who breeds on a large scale and has no work for his mares to do. The farm work is beneficial to the mare, and with proper care is not hurtful to the foal. If the farmers of the Mississippi valley would adopt the suggestions I have made so that our draft mares would be distributed over the country, in many hands, earning their keep by daily work, there would be a large increase in the foals produce which would add greatly to the profit of the farmer and the country at large.

''There is no reason why the rich grains and grasses of this section will not produce a draft horse that in both bone and quality is equal to the best that can be produced in either France or the British Isles. The time has come when we ought to breed our own draft stallions instead of importing them from France and other European countries at a very heavy cost. Our high-priced land can not be put to any better use than breeding and growing these stallions. Our grasses are just as rich and our grains are just as good as can be grown in any country, and with the same care and attention we can produce draft horses that will meet the requirement of any breeder or any market. Ample foundation stock is now in this country to breed as good as can be bred anywhere, if the farmers and small breeders of the country can be induced to enter upon this branch of stock raising.''

If the Government at Washington would place restrictions upon the importation of horses by importers who are in the business solely as a commercial enterprise and who are in no sense of the word breeders at all, and in this manner encourage and protect the American breeders, much good would be accomplished in the way of stimulating draft horse breeding in this country. We would soon produce many high class stallions that would find a ready market at prices profitable to the breeder, and yet reasonable enough so that every neighborhood could well afford to buy one. Such stallions, in most cases, would prove to be reliable foal-getters, and be of great value to the neighborhood instead of a disappointment and heavy loss, which is too often the case with imported stallions, especially when sold by irresponsible and often dishonest dealers who have no interest in the draft horse except what he can make out of a sale carried forward by smooth talk and sharp practices.

I have always been a protectionist but I would like to see the principle applied to the farmer and breeder as well as to the manufacturer who depends upon the farmer and stock raiser to make a market for his goods. I would like to submit a few suggestions as to how to breed and develop the draft horse but my paper is already long and I can touch but briefly on this important point.

### HOW TO BREED AND DEVELOPE THE DRAFT HORSE.

"First of all, good breeding stock must be obtained. Draft horses of the type, size, quality and action now demanded by the market can not be produced from undersized and inferior stock. Soundness is an essential requisite and bone and quality are necessary; good feet can not be dispensed with and good action adds much to the value of the present day drafter. With the right kind of breeding stock the battle is half won but much depends upon the care and feeding. In my experience I have been surprised in late years at what can be accomplished in the development of bone and muscle by judicious feeding and plenty of outdoor exercise. If colts are permitted to have constant outdoor range, both winter and summer, with good sheds to run under in time of storm or severe weather, all they need is plenty of good grass—a liberal allowance of oats and bran with a little corn perhaps in the winter time; also corn fodder, bright oats straw and plenty of good hay for roughness. Under these conditions they will develop all the bone and muscle required, will be active and vigorous and when coming three years old will be sufficiently matured so they can be fed for the market and heavy weights obtained. With the constant outdoor exercise and feed suggested, the colts have grown up strong and healthy, their bone and muscle are hard from constant use, their lungs are sound and their digestive organs are in good working order.

"In the fall after they are two years old they are well matured and when fed for weight will take on flesh rapidly and they have the bone and muscle to carry it. Draft horse breeding when carried on with judgment, either by the farmer or larger breeder, will be as profitable as any other branch of stock raising for many years to come and will always be profitable when intelligently pursued. It is important that the business should be encouraged in all legitimate ways. It is not only important to the farmer and breeder but equally important to the manufacturer and business man. The draft horse is an essential element in general prosperity. Without him commerce would lag and agricultural progress would be retarded. He is at the very foundation of all industrial progress, the farmer's friend and ally and the king of the market place."

THE PRESIDENT: Are there any questions you desire to ask Mr. McMillan?

A MEMBER: I would like to ask about what price the average farmer could afford to pay for these mares to put upon the farm?

MR. MCMILLAN: Of course much depends upon the situation of each particular individual. I may say generally, that in my opinion, the present price of draft mares is entirely too low. I judge largely from the prices I have obtained myself at the public auctions I have held. I have held five annual sales of Percheron horses, mostly mares. These mares have sold at at prices ranging from two hundred and fifty to four hundred and fifty dollars, averaging somewhere in the neighborhood of three hundred dollars each; good mares, say four or five years old.

I believe that any intelligent farmer that knows how to handle horses could well afford to take a pair of good draft mares, say four or five years old, and pay one thousand dollars for the pair. I believe it would be as good an investment as a good shorthorn cow at one hundred dollars; I think they would pay a good interest on the investment.

We do not appreciate the value of good draft mares in this country yet, but we soon will. Now, since 1892 there have been practically no draft mares imported, because the people of this country are not willing to pay the prices justifying their importation. Draft mares today, in England and France, are higher than in this country. It seems to me strange that farmers and breeders will go out and pay all the way from one thousand to three thousand dollars for a stallion, and yet they hesitate and think the price is high when the mother of these stallions sells for three hundred to five hundred dollars. I have not been in France myself, but have talked with a great many importers and people acquainted with the methods there. I am told that in France the farmers, the men who work the land, have all these Percheron mares; that these men who you see named as importing breeders as a matter of fact do not raise these colts at all, but they are raised by the individual farmers, who has a team or two teams; the man named as breeder being the owner of the stallion, he having an arrangement with the owners of the mares, and he having the privilege of selecting from the colts such as meet the demands of his trade. So that the farmers raise these colts and then the dealer buys them and feeds them and gets them in condition to sell to the American buyer.

Now, there are a great many breeders in this country, men who are trying to raise draft horses to meet the requirements of the breeding public, who would be only too glad to have the farmers take these mares and raise these colts and to sell them to us that we might develop them. The business of developing is a business for itself. The farmer can keep the colt until it is about a year old; then it should be turned over to the man who has pastures, fences and accommodations. I think that the farmers of the country here should give attention to this method of stock raising, and there is no question but for the next ten or fifteen years at least there will be a demand for all the good stallions we need. We will find markets away from us; we can send them to Canada and Argentine.

MR. TRIGG: Mr. President, don't you think we ought to tender the gentlemen a vote of thanks for showing to us in his paper how the Standard Oil Trust has at last proved a great blessing to the farmers of Iowa?

THE PRESIDENT: The next paper is entitled, "Some Thoughts for the Cattle Feeder" by A. L. Ames, of Buckingham, President of the Corn Belt Meat Producers' Association.

Prefatory to reading his paper, Mr. Ames said: The question assigned me is so broad and involves so many different conditions and heads, that you will not be surprised at all if I omit a great many of them that are prominent in your minds today. I will only touch on a few, and I hope that as to any questions that will be asked, some one will be able to answer them and bring out the different points that you all know should be brought out before we are through.

## SOME THOUGHTS FOR THE CATTLE FEEDER.

BY A. L. AMES, BUCKINGHAM, IOWA.

Among the varied industries of this, and other states there is none of more importance than the production of meats. In order to fully appreciate the trend of affairs for any definite period it is necessary, in almost every case, to go back over a series of years and note the changes, if any, that have been made, and the conditions under which such changes were made. That great changes have been made in all branches of farm industry is most apparent to all, who but stop a moment and reflect on methods and conditions of twenty-five or thirty years ago.

Since the close of the Civil War this country has seen the most marvelous advancement known to history. Unbroken prairies have been converted into farms, and they in turn have made possible flourishing cities, and wealthy states have been added to our public domain.

The science of irrigation is today changing the Western desert and lava beds into beautiful farms, and fruitful orchards, while drainage laws are making possible many new acres of most valuable land here within our own beautiful State. Among all this scheme of growth, advancement and wealth in agricultural states, and especially here within our own beautiful Iowa, there has been nothing of more importance than the live stock industry in bringing about the changes noted. If this is true (and I believe you are all willing to concede the point), then it becomes apparent that such an industry must be protected against unfair or unjust discrimination or practice. That the law of supply and demand be allowed to govern the output of all products of the farm. It is by this means alone that the ''Plain people,'' as Lincoln terms them, are able to maintain the position in this body politic they now hold.

In changing the annual products of our farms into material wealth there are five separate and distinct factors.

First—The producer, or the man who combines grains and grasses of the farm with animals, and manufactures the finished product ready for the market, and the shambles.

Secondly—The transportation company, which provides the means of transferring these animals from the location where they were grown to the place where they can be consumed.

Third—The packer, as the individual, company, corporation, or trust, is called, who converts these animals into edible material.

Fourth—The retail merchant, who distributes these products to their many patrons.

Finally, the consumer, the one we all serve, and for whose benefit and pleasure we all have labored.

In each of these departments the animal should pay toll, unless through fault or negligence of the individual operator. As each is dependent upon the other in the many stages of the animal from yard to block so should all be interested in maintaining a living profit to everyone. I do not mean by this that the chances of loss should be eliminated entirely. We all know that every business venture at some period of its history will present a risk. What I do mean is, that under normal conditions market values, should be on a steady and even basis, in order that the originator of the product can form a reasonable estimate of the profits of the business before beginning operations. The business of feeding and finishing cattle for the market and consumption, has been, and necessarily must be, one of exceptional hazard. The length of time necessary to manufacture the product, and place it upon the market, gives opportunity for a change in the demand for this product, and relative change of values. The one item more than all others, that affects the productive cost is the feed bill, or the value of the grains and grasses that have been consumed. The question of animal husbandry is only another method of condensing bulk into smaller packages, consequently the values of lands and rental of the same, as well as the price of grain consumed, must be considered as factors in the problem.

There are two distinct methods of producing beef, or making fat cattle. We will not go into these in detail, but, briefly stated, one is the production of the finished animal by taking the calf and continually using the forcing process until sold. The second method, and the one most used, is to grow the cattle for a certain period, usually two years for natives, and three years for rangers, on grass and coarse feed on the farm or range, after which they are placed on a grain ration for a length of time, and made ready for the market. The first item, then, in the feeding problem is the cost of steers at this period; second, the price of corn, and other feeds used; third, the cost of transportation; fourth, what the steer sells for in the market. At this point the producer steps out of the problem and returns home to count his profit or loss, as the case may be.

As great changes have been made in the industrial world, so have there been equally as great in the consumptive department. A few years ago corn was the only fattening feed used here in the West; now the feed yards and farms must handle all manner of "by products." Corn has become an article of necessity in the old world. The feeder of today must be able to compete with the export and manufacturing demand in the price of corn, when securing supplies for his feed yard. Twenty years or so ago a feeder could buy his corn for eighteen to twenty-five cents. In recent years, and particularly the last two, he has paid from thirty to sixty, or more than double the former price. When you know that an eleven hundred pound steer will consume twenty-eight pounds of corn a day, or its equivalent, and that it will take from one hundred and twenty to one hundred and eighty days, and in many instances a good round year to place him on the market you begin to realize that it costs something to make a fat animal. Taking, then, the first item of expense in the feed yard, the price paid for 1,000 to 1,200 pound feeders, I find that from January to May, 1902, heavy feeders of good quality cost 4½ cents per pound, and sold in the market at $6.50 to $6.75, that the price of corn fed these cattle during this feeding period, cost approximately one cent per pound. In this same year I find that I paid for one drove of feeders bought in the Chicago market, in the last days of August, $5.25 to $5.50 per hundred; one drove of Dakota cattle, $5 25 F. O. B. feed yard; on September 3d, in Kansas City, one drove, $5.20; on September 10th, in Chicago again, a drove of North Dakotas, $4.70. In sixty days from the time of the first purchase, I began marketing these cattle at $7.30 per hundred weight, and from that price down, according to the length of time held after the 29th day of October, 1902. You ask why I select this date as a landmark in the price of cattle? It is in accordance with certain convictions I have regarding the trend of the market, and the reasons governing the same, but without other proofs than circumstantial evidence, but evidence, which to my mind is sufficient to warrant such conclusions. You who are familiar with stock yard practices know, that every feeder was encouraged early in the season of 1902, to do as large a business as possible. Every assurance was given him of getting a good market as the season advanced. Rumor gave a report that certain independent and competitive industries located at the stock yards were to be whipped into line during the season in order that market values could be better maintained in the future. In plain terms, it was understood that the "Big Four" would have no interference with their business, and that they intended to whip competition into an agreement by the use of usual business methods.

That the prices established during the early season of this year were beneficial to the producer, for a short time at least, is true, but on the 29th day of October, if I remember rightly, this same old lady, Dame Rumor, spread the report that an agreement had been reached, and the war closed. I started home by next train to market cattle as fast as human energy and steam could get them in, but the speed of our stock trains was nothing in comparison to the way the price of cattle went down. You can all recall the condition of the market at the close of 1902 and the season of 1903, men of courage and skill put time, money and care upon the altar of good faith, only to be sacrificed by the greed of a monopoly that expects to filch unceasingly from the larder of the producer.

The past few years has seen a most wonderful advancement made in the methods of feeding and the combinations of grains, that form the feeding ration, and the apparent results as evidenced in the beef product. Our colleges have been of great assistance in determining many of these methods, with some mistakes, I grant you, but on the whole a most wonderful advancement. The transportation question is under advisement, and I trust will reach satisfactory conclusions, as a better understanding is had of the needs each for the other. It is time the people wakened up to the fact that they have great interests at stake, as well as the railroads, and that their enterprise and labor made it possible for these traffic lines to be builded. Why then, let me ask, is it unreasonable for us to ask to be represented in establishing rates used on these lines? Just at this time the question of enlarging the power of the Interstate Commerce Commission is being urged upon Congress. It finds its most bitter opposition, I am sorry to say, from men whose constituencies are among the producers of the West. Let these men remember the magnificent grants of land as well as taxes that have been voted by the people, for the building of these roads, and then say, if they can, the people have no right. There is a place where patience ceases to be a virtue, and the patience of the producer has about reached its limit on many of these questions. We ask nothing unreasonable, we want no favors. What we do want, and expect to obtain, is fair and impartial treatment with no favors shown such corporations as Armour, Swift and other concerns, who are able to dictate the rebates they are to receive for the privilege of furnishing their own cars, and say just how they are to be handled. It is high time that investigation along these lines, as well as many others, be made. In order that this work may be carried on intelligently it is necessary to have a definite understanding and a well defined plan. The Corn Belt Meat Producers' Association is organized for this purpose, and I respectfully urge everyone interested in these questions to become a member of this association, and aid by his good will and small per capita tax the solving of these problems.

The last and most important factor of the feed yard business is the selling price of the cattle, when placed upon the market As this is the most important, it is also true that it is the one most manipulated, and about which the least is known. The price of the feeding steer should be largely controlled by the cost of production, and as roughage forms a greater part of his feed the price naturally does not vary greatly. It is only in years like 1902 that a wide spread of prices is noted. The *Drovers Journal* recently quoted the average price of feeders for 1902 at $5.15; in 1903 $3.65; 1904 $3.65 for range bred cattle. Years prior to 1902 the price maintained about the same as 1903-4. The price of corn has been high for some years. As the market for this product is continually widening it stands to reason that we must either raise more corn or feed a higher price product, or feed fewer cattle. The cost of transportation is no less, but rather more on the whole, as the roads are taking longer time to move stock, which gives a proportionate greater shrink, and often a lower price on the market. When in addition to this we meet the close combination of prices on the market, that we have been getting the past two years, the only wonder is, that anyone has the nerve to "go against" the proposition of feeding cattle. The difficulty seems to be in furnishing the kind of cattle wanted. One year ago pens were full of heavy choice cattle. They were produced at the request of the packers. The demand for all kinds of meat was good. The price on the block was a little lower, if any, than that of the preceding year, but thousands of cattle were sold that did no more than pay for the corn they had eaten. Can you blame a man for thinking he is "held up" when he gets back only enough money to pay his corn bill, and has to lose the cost price on his steers, and interest on his money, risk of loss by accident and death as well as his labor, at the same time see this beef sell to the consumer at practically the same price as when he was receiving enough for his cattle to make him a good profit? You will say that today these cattle are bringing good prices. It may be true, they probably are making a little money, but let a few loads too many arrive every day for a month, and see what happens. Mr. Packer must have something with which to hammer prices, and he selects the most convenient tool at hand. The class of cattle known as good cattle should bring relatively a steady price, they make a staple product, and should be classed as such in the market of the world.

The question today is how to make feeding profitable, and again secure for the business the standing lost during the two years passed. The first step in this direction must be that of securing better bred animals.

Mr. John Gosling, or "Uncle John" as he is more popularly known, in referring to this question, says: "Remember that flesh is bred on animals (it can not be fed on, at least to any great degree) and that fat is fed on. Then remember, also, that big bone goes with big flesh and small bone with fat." This coming from a man who is undoubtedly a master of the art which tells from outside appearances the flesh qualities of a bullock, gives great value to the opinion. You must breed for flesh; you can feed on fat.

The successful feeder must in the fnture look more closely to the quality of the cattle he secures for his feed yard. More attention must be given to the quality of sires used. The great amount of trash ordinarily seen in all the markets should cease to be, and the good ones made into a paying product. The differance between the good and poor was never more apparent than at the present time. Never in the history of the cattle trade have better animals been produced, and never so many that are utterly impossible of any good to any one even with the best of care and feed. There are others that could and undoubtedly would have been fed into prime animals, if the feeders of the country had not lost all confidence in the outcome of the market.

Here is the real difficulty. One season finds light inferior stuff, with no breeding, with nothing in their favor, selling for almost as much as the well finished fancy bullock, and perhaps within a twelve months, as at the present time, you find these conditions completely reversed. Is there any way to better regulate these unequal conditions? They can be bettered? Yes;

Entirely regulated? No. Let us have a free and untrameled competition at the yards. Let the Commission Men's Association be reorganized and put on a more equitable basis. Let the buying orders come through the natural and usual channels, and all packing plants be compelled to run on an independent basis, and I believe we will see confidence again restored to the feeding business of Iowa and peace and prosperity once more control this, the greatest industry of our State.

THE PRESIDENT: We have some time yet, and the paper is open for discussion.

C. W. MILLS: I would like to ask Mr. Ames if he considers the quality of beef cattle in the State of Iowa deteriorating?

MR. AMES: I take it the gentleman asks with respect to the cattle raised in the State of Iowa. I think it is harder work today, for the feeder to go out through the different counties of the State of Iowa and select well bred, perfect feeders than it was fifteen years ago. I would also state along these lines that a short time ago I received a report from the general manager of the stock yards, giving the number of feeders that had gone out from the different stock yards into the country to feed. I was surprised to find there were about one hundred thirty-five thousand to one hundred fifty thousand cattle less had gone out this fall than had gone out the previous year—that means about one week's run on the different markets of the west—but I will say in opposition to that, that this year was the only year for the last ten, when I, for instance, could go out and get cattle for my feed yard from my neighbors. I think the same thing has occurred in the different parts of the State. This means a great many more than one hundred thirty-five thousand have been put into the feed yard that have not gone into the distributing yards to be counted.

I will say, unhesitatingly, that the grade of beef cattle raised in the State of Iowa is many per cent less than it was ten or fifteen years ago.

A MEMBER: To what does Mr. Ames attribute this; what is the cause that cattle of proper grade can not be selected now equal to what they could be fifteen years ago?

MR. AMES: I can only express my opinion about these things. One of the reasons, I think, is the high price of land. Perhaps that sounds unreasonable; but I think so. It works in this way: In the last ten years the owners of farms in the State of Iowa have gone to town and they have rented their farms to men who work them for them. Those people have gone into grain raising largely. They are going to take that farm and get every dollar out of it they can. They do not put the money into a herd of cattle on those farms, as did the original owners. I believe that is the prime cause. The renter will simply go out and buy a grade or common animal which he can buy anywhere for from fifty to sixty dollars. Those are the men who sell their stock and cattle; those are the men who raise feeders in the State of Iowa today. I think a change is coming. I believe it is easier to sell well bred animals today than it has been for the last few years. You have got to overcome the fact that the owners have put their farms out for rent, and these renters are selling grain instead of raising good beef.

MR. TRIGG: If you buy a steer at four cents a pound and keep him a year, and land is worth $100 an acre, and you finish him of and put him to market on corn worth fifty cents a bushel, what price have you got to have to make a profit?

MR. AMES: With Mr. Trigg's permission I will answer that question by asking Mr. William Drury to state what it cost him to winter a bunch of cattle last winter.

MR. DRURY: I did not expect that I would be called upon to make a statement to you gentlemen here. I happen to know very closely what it cost, having bought all my feed in the shape of snapped corn and fodder, and invoicing my hay at the same price it was bought. I fed $1,000 worth of feed to 100 head of cattle from the first day of January to the 29th day of April. I weighed the cattle in on the first of January and I weighed them out on the 29th day of April again. I figured my gain and had an average gain of $100, or equal to the $1,000 for the feed, or $400 gain

MR. TRIGG: Did you think that paid?

MR. DRURY: No, sir.

MR. MARTIN: Has it not been the experience of every feeder in the State of Iowa, in the past two years, that long feeds have lost money all the time.

(Several voices). Yes, yes; short ones too.

MR. AMES: There are no cattle that bring so little today for the killing value as the steer fed from sixty to one hundred days. You may go out and see the best kinds of meats; you can go into the country shop and select prime bodies that are sold today from $4 to $4.35; those cattle have eaten from sixty to one hundred days; you look at them in the yard and you would think they were prime animals; they ought to be worth $1.50 more. I do not believe it pays a man who sells his steers for $7.50 to feed them a year on fifty and sixty cent corn.

Mr. Martin: I am not a feeder myself, yet I am engaged in it and have been for fifteen years. My experience on two loads of cattle this past season is this: The corn was pretty high; I had two loads of cattle and only put one in the yards. We fed them until the first of December. The other load we turned out into blue grass pasture until the first of October and put it in the lot and fed it a little corn up to the first of December. I got $4 a head more for my short feed than I did for the long feed. Counting the price of corn, my experience is, short fed cattle paid best this year.

Mr. St. John: I am not from Missouri, but from northern Iowa; yet I will have to be shown in regard to one statement Mr. Ames makes, and that is, why it is that he can not select a good grade of feed steers in Iowa at this date, as well as he could fifteen years ago, when we people who are trying to raise and have been raising fine stock from the different herds all over the State of Iowa, and with the reputation this State has for fine stock. I can not understand that part of his argument. I confess, in northern Iowa it is much the reverse as to the selection of feeders, and it does seem to me that Iowa is deserving a little better record than that in the way of feeding steers.

Mr. Ames: In reply to Mr. St. John's statement, I desire to say, that I ought to have qualified my statement and said, in my locality. I want to go still further and say there are localities where they are using better bred steers. I will repeat, that in many locations, where these men who own their own farms have gone to town and depend on the man who pays as high as $4.50 an acre for these farms, you will find cheaper class of cattle. I will also say that my experience has been, that selling on the range to the northwest has been bettering rather the last few years; there has been a gradual change and more of a demand for our home product. But before that, my buyers came from North and South Dakota, and some of them from northwestern Iowa.

Mr. Trigg: Isn't the creamery everlastingly at war with the beef?

MR. AMES: I am quite a man to think the old cow and pail do pretty well yet. I want to qualify this feeder business. I believe that the hand-separator is going to be a great help to the Iowa farmer; I want to say further that I have got one of my own. I do not milk many cows, yet I have enough that the boys pay for their own way. I milk my registered cows, many of them.

I believe a man as a feeder ought to have judgment enough to go into a district where they raise the right kind of cattle and get them for his feed yard. I do not think it is compulsory for a man to buy in a dairy district. With the use of the hand-separator, I believe it is possible to milk a cow in Iowa and make a succees of it.

MR. PACKARD: As to this point, about the lack of competition in the Chicago market, I would like to ask, if any one knows if the investigation that has been carried on in reference to that, whether there has been found any ground which the Government can base an action against the packers and break the combine?

MR. DRURY: I happened to be in the yards yesterday and I was told by a very prominent commission man there, who was told by the head inspector there now and who has been there for the last six months, that they had positive evidence that the prices were fixed every day, and that they had positive evidence that each packer had his exact district to work in. He says, we have four big packers on the market; one individual packer buys the keepers; the next one, the canners; another gets the fat cows, and the other the choice heifers. Therein, he says, all competition is eliminated. The next day it is reversed and we have one of the Big Four buying one kind of cattle, and so on again. Where is the competition coming in?

MR. AMES: I do not believe anybody knows any more than hearsay, in my opinion, as to this Government inspection. If it is going to be a secret investigation, it is very likely to be so. I myself have great doubts of the matter, in the way they have gone at it.

These are however the facts, as Mr. Drury states it, as we all know.

THE PRESIDENT: We have with us today a swine breeder of thirty years' experience, who is now a member of the executive committee of the International Stock Show. Mr. A. J. Lovejoy, of Roscoe, Illinois, who will read a paper, entitled "Swine Breeding."

Before reading his paper, Mr. Lovejoy said: You have all listened to a very elegant paper on cattle feeding and breeding; also one on the breeding of draft horses, and I suppose it was necessary to have some one to defend the hog, and you had to send clear over to Illimois for him.

## SWINE BREEDING.

### A. J. LOVEJOY, ROSCOE, ILLINOIS.

Swine breeding is not a very high sounding name, and many there are who look upon this species of farm animals with disfavor if not with absolute disgust, yet the hog is known over the entire world and is confined to no one part in particular. He is the animal which the ancient sacrificed to the Godess of the Harvest (Ceres). He is also, as the Irishman said "The gentleman that pays the rent."

The utility of the hog is in a great measure owing to its remarkable fecundity, reproducing at one year of age and bearing from five to ten at a time and often more. Some statistician who handles figures with great ability, has estimated the produce of a single sow with only six young at a time in ten generations to amount to the grand total of six million five hundred thousand (6,500,000). This number will no doubt equal the statistics of the American hen as given by the ardent advocates of her producing quality. It takes a great statistician to get ahead of a hen crank.

### MONEY IN HOGS.

The hog has been a reliable source of revenue on the American farm since the earliest recollection of man. In olden times the small farmer and early settler raised but a few, and the mechanic or laboring man of the village as well as the Irishman on the section each had his pig to consume the refuse of the kitchen and dairy and to supply the family with good old fashioned pork and sausage, as well as spare-rib and head-cheese, and at the present day the up to date American hog, supplies in his various products the wants of the people of the civilized world, not only with choice bacon and hams, but with lard, illuminating and lubricating oils, sausage, souse, combs, brushes, buttons, knife handles and ornaments of many kinds. Even the blood, a portion of the bone and waste scraps of meat, not otherwise used, is manufactured into by-products to be used as feed, among which are blood-meal, bone-meal and tankage, which latter is one of the best feeds yet discovered to combine with corn meal and other fat forming feeds for the use of pork production; coming as near making a balanced ration when used in proportion of 75 to 80 per cent corn meal and from 20 to 25 per cent tankage, as can be found. You will note by this that there is no waste in the slaughter of swine at the present day, that after he has passed through one of the great killing and curing establishments at Chicago, there is practically nothing lost in the process but the squeal. Some people do not like swine breeding and feeding, such should let it alone, for to succeed in the handling of any kind of farm stock, one must like the animals and the work. You often hear the remark "As dirty as a pig." This is a villification of the animal which Benjamin Franklin's colored servant said "Was the only gentlemen in England," from the fact that he was the only animal that did not have to work in that country. It is a well known fact that in most respects, the hog is the most cleanly of our domestic animals, and unless closely confined in small quarters will always keep himself and his bed clean. In this respect he is much cleaner than the horse or cow.

"It has been said that the hog is a machine that oils himself, puts ten bushels of feed into less space than a bushel measure and in so doing doubles its value, then can carry it to market on his back. Corn, barley, oats, grass, rape, clover or any of the by-products of these loaned to a well-bred, thrifty hog, is money at big interest. In fact, it is a mint, the grains and grasses are the bullion, which put into the hog is transmuted into coin. It is an honest mint, and gives sixteen ounces avoirdupois of edible meat. Properly bred, fed and intelligently handled this autocratic porker will pay off our debts, furnish the money to improve the farm, place a piano in the home, a carriage at the door, as well as means to educate our boys at the Agricultural College.

He furnished the means for us at home on the farm to build in 1902 a general farm barn that complete cost a little over $5,000. The breeding of swine with us is a specialty, and during 1902 the sales of hogs alone from our 300-acre farm on which your speaker lives, was $10,260, not bought and sold, but with the exception of four or five were all grown on the farm during the year. I also read a few days since a detailed statement in an agricultural journal of an Iowa farmer, who stated that the sales from an eighty-acre farm which, if I remember right, was a little over $2,000 for the year; nearly all was from the sale of hogs for market purposes. There was scarcely a month in the year that this man did not sell more or less hogs to be shipped to market, and the hogs were by far the most profitable produce of the farm So much for hogs in general."

### THE BEST HOG TO RAISE.

"Now, I suppose many of you think I am going to name some particular breed, or that I have an 'ax to grind;' far from it. The best hog to raise is the one that best suits your fancy, or that you think is best adapt d to your surroundings. There are many good breeds, all very similar, and any of them will pay you well if properly cared for; and also, any of them will die of the cholera or swine plague if the germ gets into the herd, sure cures to the contrary notwithstanding. This matter of swine disease, while a great drawback to the business, is something that no man has yet mastered. There are all kinds of beliefs regarding this disease as well as cures. From an experience of nearly thirty years as a swine breeder, I must admit I know as little about it now as I did in the beginning; one thing that I do know is, that no matter in how good a condition the animals may be or how few are kept together, or what the feed may be, or the weather, if the germ once gets into the herd they are practically a goner. I personally know of cases where nearly the entire herd has been lost and the hogs were in perfect health and condition, not over six or eight in a place, the lots being good grass and clean sleeping place, clean feeding floors and troughs, hogs regularly disinfected, pens also; fed only the best feed for growing animals, some with very little corn mixed with the feed and many of them with none, yet the disease broke out ln a very malignant form, sweeping four-fifths of the herd, yet with other farmers in the neighborhood who gave no attention whatever to their hogs, other than to feed them, lost no more or as many in proportion to the number, and in the same neighborhood, still another farmer lost none; and so it goes over the different states, yet possibly for a series of years swine plague may not be such a curse after all. Were it not for this, who could venture to prophesy what the future price of hogs would be on the market in five years. Their number would simply be marvelous.

### MARKET DEMANDS.

''The market now demands quite a different style of hog than in former years, and yet any kind of a hog will bring the ready cash, but not all with equal profit. The most profitable hog for the general farmer to raise is one that will with good care and feed reach a weight of from one hundred and seventy-five to two hundred and seventy-five pounds in the shortest possible time. To do this he must be a pig of good length of body, a good feeder and make a part of his ration of grass, rape or clover. There has been of late years a great hue and cry about the ''Bacon Hog,'' and there are some who think we should return to the old type of fifty years ago, thus losing all the improvement made by selecting and breeding for all these years, losing the improvement in early maturing and feeding qualities of our modern hog. To the farmers too far north to grow profitable crops of corn something bordering along the Bacon Type of pig can be produced at a good profit from any of the improved breeds of this day, when if sold at a weight of one hundred and seventy-five to two hundred pounds would make prime bacon and superb hams. Speaking of bacon and hams, it is said that the principal reason our hams and pork products are discriminated against in London (England) and Limerick (Ireland) markets is because of their better quality, and that they can be sold cheaper than those produced in their own country.''

### AMERICAN HAMS.

It is a recorded fact that the highest priced fancy pork products sold in Ireland by the Limerick dealers was put up in Chicago, and by special instructions marked with private brands of Limerick dealers, who for years have been selling American hams and bacons for the continent as ''Best Irish Hams and Bacon.'' The authority of this can be found in Consular Reports, number 122 and number 129. It is a matter of record also that the Bacon Curers Association of Great Britain, who prosecuted the Junior Army and Navy Stores of London for selling American Hams for Irish, secured a fine and costs, amounting to $360. Investigation showed that the American Hams were changed to Wiltshire hams by oiling them and rubbing them with meal, then branding them ''Finest Wiltshire.'' They were then put on the market as the genuine Irish product and sold for twenty-four cents per pound, while the remainder of the identical consignment brought but seventeen cents per pound, sold as American product. A correspondent for an Eastern paper; living at Leeds, England, states that in their market the best American hams were selling at thirteen cents, and needed no ''faking.'' All the American farmer needs to do is to keep up the quality of his product, and the English market is assured. Thus it would seem that we do not need any change of breeds to produce either highest quality of bacon, hams or other pork products.

### BEST FEED FOR GOOD RESULTS.

"If we wish to grow the bacon type and cater to that trade, we can do so by selection and feeding, and to accomplish this we have only to select the larger, more rangy sows for breeding. Then by a system of feeding the by-products of the mills and the dairy as well as some of the by-products of the packing houses in connection with good pasture, and less corn we can pracically accomplish the result. When the packers will pay a premium for bacon hogs, it may pay to cater to this trade, but in the Illinois corn belt where corn is the cheapest feed, the thick meaty, early maturing type of hogs will make the farmer the most money with the least expense, and yet this very corn ration as fed by many farmers has done much to weaken the constitution of the present day hog, and this coupled with the too common method of each year selecting young sows from the herd that are immature for breeders and selling the older ones is the prime cause of the small, fine boned, chuffy hogs seen on many farms, that each year shows a decrease in size as well as a decrease in the number of pigs raised in the litter. While I am an advocate of early maturity, I want a pig that while it will make 225 pounds at six months of age or from 250 to 275 pounds at eight months, I want him of such conformation and length of body with the feeding quality to grow him to 375 pounds and upward at the age of one year, and if a sow and kept for a breeder in the herd, one that will weigh at maturity from 500 to 600 pounds, or if a male one that will weigh even more. We have now at home on the farm a boar that weighed 787 pounds in his yearling form when shown, and carried this weight with ease. His sire also weighed at the age of sixteen months, 740 pounds. To get this weight we must have good length of body, plenty of bone and good feeding qualities. The short chunky type can not make this weight. These large, early maturing types among all of our improved breeds is the result of many years of careful selection, breeding and feeding. It is a well known fact that the first 100 pounds made in growing a pig costs much less than the second 100 pounds, and that the cost—or food of support—requires but about one fourth as much for the first 100 pounds as it does for the fourth 100 pounds. The risk is also much less in growing a hog that can be put upon the market at the age of six to eight months, than in having to carry them along well over the winter to get this or a heavier weight. Better raise two crops of pigs a year from the sows and sell them at a light weight than one crop carried on to a heavy weight''

### SECLECTING BROOD SOWS.

This is a very important matter, and much of the success of the farmer or breeder depends on this one thing. In selecting the sows that are to be the mothers of your next year's crop of pigs, do not go out into the herd and pick out the short, fat, plump little things that look so nice. In fact if it was my own case, I would keep the sows that produced the last crop of pigs at least all of them would be kept over, that had proven to be good mothers and reared a good litter. I would, only if necessary to add more sows to the herd, select some of the larger growthiest of the last spring sow pigs, or "Gilts" as sometimes called for this purpose. When I had finally gotten together a herd of brood sows that suited me, I would keep them as long as they produced strong thrifty litters and raised them well. We have kept sows in our own herd at home until thirteen years of age and lots of them up to eight or nine years of age. It is a certain thing that mature sows produce better pigs than young immature ones, and why not?

There is as much difference in sows as mothers and also as much difference in the milking qualities as there is in a herd of dairy cows, and this counts much in growing the litter the first three months. Right here let me urge that the pigs should not be weaned too young. They should remain with the sows for at least three months or until the sow actually weans them herself, when if given proper feed during this time in addition to that furnished by the mother, the youngsters will never know when they were weaned and there will be no check whatever in their growth.

### SELECTING THE SIRE.

You have often heard that the sire is half the herd, in a herd of well bred cattle. It is not much less in a well bred herd of pure bred hogs, and is also the most important factor in the breeding herd of the general farmer. In selecting the sire, go and see him if you can, if you can not do so write to some reliable breeder of the breed you are using and describe what you want. In so doing do not describe a perfect model for such a one has not yet been bred, and if he had been the breeder would no doubt refuse to part with him at any price. Better first describe the sows you have to mate with him, whether of the short, chunky type with fine bone, or whether a large growthy type, somewhat a little on the coarse order, these latter will be the best producers, and should be mated to a sire of a little different type, not quite so long in body or coarse in makeup, but a little more compact, that the coming litters may not be too coarse and rangy, for following the extreme of either type. Should, however, your sows be of the fine bone, thick, plump chunky type, then a sire a little on the coarse order will do, but never go to the extreme either way. Pay a good reliable breeder what he asks for such a boar as you need. He will not charge you any more than he is worth, for he knows better than many of us what such a pig will bring any day. Do not think that because you are only raising hogs for the market that ten, fifteen or even twenty dollars is as much as you should pay for a sire, for no reputable breeder can follow the business of breeding pure bred hogs for a series of years unless he can get more money than from ten to twenty dollars each for his pigs. He better let some other fellow raise them that thinks he can afford to do so. A good sire, such as would keep up the quality or improve it in a herd of hogs, for the general armer, is worth from thirty-five to fifty dollars to any man raising fifty pigs or more in a year. I know a cattle grower and feeder for the market that raises grade hogs who never buys a boar pig worth less than fifty dollars, and often much more. He claims there is no boar too good for him, as he expects the sire to add to the quality of every pig, and in this way, more than repay the purchase price.

### CARE OF SOWS DURING BREEDING SEASON.

To the breeding sows that are to farrow the coming spring good care should be given, as on the proper feed and exercise much of the success in securing strong, vigorous litters will depend. The sows during this time should not be fed continually on corn alone, as corn produces nothing but fat or white meat. It will not grow bone or flesh as well as many other feeds, but it is entirely suitable to be used with either oats, shorts, middlings, milk or tankage and when combined with any or all of these, would be a satisfactory feed. A sow that is fed nothing but corn during this period would produce a very weakly litter of pigs that would not have vitality enough to pull through the first few days, but if fed as above described the pigs will be strong and vigorous, and ready to fight for their dinner from the first minute of their existence. Sows during the winter months should have some kind of feed to take the place of grass. For this purpose either sugar beets or mangolds are good, but quite expensive to raise in our State. We have found in Illinois that sorghum is a first class feed for this purpose, being very succulent. We plant it the same as corn only quite thick in the hill and let it stand in the fall until the seed is ripened, then cutting the crop with a corn binder and shock it like corn in large shocks, the larger the better, and haul it in during the winter, as feed. A bundle or more thrown into the lot for every six or eight hogs is greedily eaten, stalks, leaves and seeds, wasting nothing but the pith, after the juice is all taken out of it. Good, well cured second crop clover is very nice, and we use also some well cured alfalfa. At home we usually run the above rough feeds through a power cutter, making it much easier to be utilized. Fed as above and given plenty of exercise, which in very necessary, together with warm dry places to sleep will insure success to the coming litters. Keep but few sows together if possible.

### WARM FEED IN WINTER.

"While our agriculture colleges have demonstrated that it does not add any to the value of the feed in the way of neutriment or digestibility to cook feed, I have found by an experience of nearly thirty years that it does pay and pay well, to feed young pigs or shotes warm feed during the winter months. Nothing looks more distressing to me during zero weather than a pen of recently weaned pigs trying to get some nourishment and a little comfort at a trough of cold or frozen feed. They can not thrive as they should and after eating and getting back to their nests, it will require them a half day to get warm again. We use a steam generator and heat the water in which all feed is mixed. We do not attempt to thoroughly cook it, but to have it quite warm when put into the troughs, the pigs quickly clean it up and go back to their little houses without a shiver and apparently grow as well in winter as in summer."

### CAREFUL ATTENTION TO DETAILS.

There are many little things connected with the successful growing of swine, besides selecting good breeding animals and being a good feeder. The latter is of course one of the greatest essentials. A man to get the best results should be a very careful observer. He should note daily every animal, see that each comes to his feed promptly and eats with a relish.

Watch their condition in every respect. See that the hair or coat looks healthy and bright, see that they are free from vermin or lice, which is a source of great annoyance and often the cause of much unthriftiness. There are many ways of getting rid of lice, but the easiest way where one is prepared for it, is to run the entire herd through a dipping tank made for the purpose using any of the various dips or Kerosene Emulsion. Crude Petroleum is also a sure remedy but is rather expensive. To entirely rid a herd that is lousy requires about three or four dippings, not over one week apart for the reason that the nits or eggs of the louse are not killed by the dip but hatch out in a very few days which necessitates another dipping at once.

See that your pigs are not coughing, if they are they probably have little worms in the throat that can be removed in several ways. Take any of the dips above mentioned, such as Moore's Hog Dip Zenoleum, etc., and use about a pint of it in the crude form to a barrel of slop. Use it once a week and you will never hear a pig cough. They will never be troubled with worms of any kind. To keep the pigs digestion in good condition we feed considerable charcoal.

We shell our corn and burn the cobs in a pit made for the purpose and they will leave the best of feed to eat the charcoal. A pen of six or eight pigs will eat a bushel of charcoal at a time once a week.

### GOOD SANITARY MEASURES.

"'It is said that 'An Ounce of Prevention is Worth a Pound of Cure.' Keep all feeding floors, sleeping pens and troughs clean. Use any good disinfectant and use it often. Air slaked lime is among the best as well as zenoleum and other similar disinfectants. These can be purchased in any quantity desired and in the crude form very much resembles a dark molasses, and should be diluted with about fifty to seventy-five parts water. It thus forms a milk white fluid which is not only a good disinfectant but a germicide. It is used in hospitals, asylums, stables, etc. Sprinkle it over the floors and feeding places, troughs, etc. If you are extensively engaged in breeding of swine, do not let too many hogs or pigs herd together." They will thrive better to be separated and kept in small numbers of about even size. At home we usually have from one hundred and fifty to two hundred pigs and hogs. We use a field of about twenty acres, divided in lots of about one acre each. These lots were formerly sowed to clover and timothy but have now become thickly sodded in blue grass. They are fenced with a woven wire fence thirty-six inches high. Each lot contains a little house 8x8 feet in size, doubled walled and lined with building paper, with ventilator and everything complete for the comfort of the pigs in either warm or cold weather. Each sow has one of these lots to herself with her litter, and is kept there until the pigs are three months old and are weaned, at which time the sow is removed to a larger pasture out of sight of the pigs, and the youngsters are kept there until they are shipped out to market or to breeders.

You may say all these things are too much trouble, too much work but remember we can not succeed in any line of business without work and lots of it. To my mind compared to being a slave to a herd of dairy cows, the breeding and caring for a large herd of well bred hogs, would be a continual round of pleasure, although neither the path of the dairyman or the swine breeder is strewn with roses, each has his troubles. The swine breeder has occasional visits of swine plague, leaving him a much poorer and a no wiser man, yet for a series of years the feeding and breeding of swine either for market or for breeding purposes will be found a profitable business. How many cattle feeders have we that could make any money were it not for the hogs. The hogs are also a profit to the dairyman in using the by-products of his dairy. They also pay the grain farmer by condensing a portion of his crop of grain and grass into first class meat, so from whatever side you look at it, the hog is a source of profit. The more time you devote to him, and the better you care for him, the better he will pay you. You must get the idea out of your head that anything is good enough for a hog. Better have the idea in your head that nothing is too good for him.

THE PRESIDENT: The paper is open for discussion.

MR. AMES: I would like to ask Mr. Lovejoy how much he will have to sell his hogs for in the market, when he has to feed sixty-cent corn?

MR. LOVEJOY: I shouldn't feed altogether sixty-cent corn; I would mix it with clover and grass. A pig that will weigh 225 pounds will make one-half of its growth from its mother alone. You can feed one-half clover and corn. But half the growth of the pig marketed today is pretty nearly obtained from her mother.

MR. AMES: Half of a 225 pounds of a pig at eight months' time that is a little strong. I do not believe there are very many market raisers of hogs that will do that. Then it costs something to raise the mother. I would like to have that put in dollars and cents. I do not believe it is paying us today to raise hogs at four cents a pound.

MR. LOVEJOY: You are not raising them for that today. You speak about the sow and the pigs. Take a sow with eight pigs and give her a little slop and these pigs will weigh 100 pounds the day they are three months old. It does not cost to exceed three or four dollars to feed that sow. I don't care if you feed her sixty-cent corn, or shorts or tankage, or anything else, when they are ninety days old they are ready to wean. This same feed continued right along, will make them a pound a day.

MR. AMES: The point I was trying to get at was that the average man in the State of Iowa who raises hogs for the market has got to grow these hogs a certain time of the year. These pigs will be dropped the latter part of April or month of May.

The average man is going to get his pigs on the market all at the same time.

MR. LOVEJOY: Why do you all want to raise your pigs the same months? Why don't you raise two litters a year? That is the very thing that "busts" the prices.

A MEMBER: I would like to ask whether slacked soft coal is just as good as charcoal?

MR. LOVEJOY: Slacked coal has nothing in it but sulphur.

A MEMBER: In regard to feeding slops and shorts, in what way do you regulate the amount the pig is to eat,—we will say, after you have it weaned—how are you going to regulate it?

MR. LOVEJOY: We try to make as near a balanced ration as we can. We feed about 40 per cent of corn meal, about 50 per cent of middlings, and we mix it very thick.

A MEMBER: Do you let the pigs eat all they want?

MR. LOVEJOY: Certainly; we always feed them all they eat up clean.

A MEMBER: Don't they get pretty fat on that?

MR. LOVEJOY: Yes, they do.

A MEMBER: I would like to ask Mr. Lovejoy the best time to have two litters.

MR. LOVEJOY: We do not raise them from all our sows. If we raise two litters, we raise them early in March and about the last to the middle of October. Those that come the latter part of April or May, we do not attempt to raise two litters from.

MR. MCMILLAN: I just want to emphasize the importance of grass, not only for pigs but for all kinds of young stock. We raise a good many hogs on our farm. These pigs can be raised to 100 pounds with but very little corn and feed, by having good pasture, either clover or timothy, or blue grass, and feeding the sows with shorts and tankage. By having this kind of feed, you not only grow them cheaply, but you have another advantage; the pigs have the range; exercise is good for them; it is good for the lungs, and this green feed tends to expand and enlarge the digestive organs until you begin to feed them corn and other feed; their capacity will be greater. I believe that even at four cents a pound, in that way, you will make as much profit on hogs as anything else on earth.

This suggestion, as I say, is not only good as to pigs, but I find in raising colts, that if you can have grass that is not pastured down too close in the fall, you can let the colts run out during the winter, with simply an open shed to run under, and they go through the winter with very little grain feed. We raise our colts in that way on the farm. We have a bunch of colts now, yearling stallions that are still on blue grass pasture, and in that way we raise them until practically fit for the market. We have yearling colts in the pasture now that never had a halter on, that will weigh from fourteen hundred to fifteen hundred pounds.

MR. AMES: I would like to ask Mr. Lovejoy to be a little more definite in regard to his feed that he feeds a sow. He says, a sow can produce a pig until it weighs one hundred pounds, three months old, with very little feed. We do not understand that. Does the sow starve while she is raising them?

MR. LOVEJOY: I said very little feed to the pigs.

MR. MILLS: We would like to know what that amounts to?

MR. LOVEJOY: We estimate that our herd of brood sows cost us twelve dollars a year.

A MEMBER: You have them on good pasture?

MR. LOVEJOY: Certainly. I do not call four dollars a very expensive feed for a sow with eight or nine pigs.

A MEMBER: I would like to ask Mr. Lovejoy where he gets his pay for the rest of that twelve dollars; he charges four dollars for the litter of pigs?

MR. LOVEJOY: I get it when I sell the pigs.

A MEMBER: Don't you have to charge them with twelve dollars?

MR. LOVEJOY: No, sir; I charge the entire herd up with the entire amount of feed for the year, care and everything else, and credit it with the sales. There is no litter of pigs but what will bring a good many times twelve dollars.

THE PRESIDENT: Before we adjourn I will call attention to the afternoon program. Mr. F. A. Delano and Mr. H. C. Nutt will talk on "Transportation—Its relation to the Iowa Farmer;" Prof. P. G. Holden, on "How to Increase the Average Yield of Corn Five Bushels per Acre." Tomorrow morning L. H. Kerrick of Bloomington, Illinois, will address you on "Cattle Feeding;" and George H. Wells, on "Commercial Corn Grading." The corn exhibit you will find in the basement of the Capitol, and the fruit exhibit in the rotunda.

We will now stand adjourned until 1:30 o'clock.

1:30 O'CLOCK P. M.

THE PPESIDENT: The first on our program this afternoon will be "Transportation—Its Relation to the Iowa Farmer," by Mr. F. A. Delano, General Manager, C., B. & Q. Ry.

Before reading his paper, Mr. Delano said: I feel very deeply the honor you pay me by inviting me to address you. Although I might have said a few words extraneously, I thought I had better put my remarks in writing and try to stick to the notes; at the same time I would like very much if you would interrupt me and ask any questions you may desire.

## TRANSPORTATION—ITS RELATION TO THE IOWA FARM.

F. A. DELANO, GENERAL MANAGER C., B. & Q. RY.

*Mr. President, and Gentlemen*—You have asked me to address you on the subject of Transportation in Its Relation to the Iowa Farmer.

Transportation, in the broadest sense, enters into all trade, all commerce, and most intimately into our daily lives. Trade can not exist without it, for all commercial transactions require that there shall be facilities for interchange, so that produce and articles of manufacture not needed in one district may be transported to another district where they are needed. In the time of the Roman Empire it was so fully understood that civilization required good means of transportation that the empire builders of that time spent money on roads (wagon roads), which are famous even to this day. The Roman Empire became supreme largely on account of its fine wagon roads and its transportation facilities by water.

Railway transportation, about which you expect me to address you, is one of the most recent forms of transportation. It has been in existence in this country only seventy-seven years, so that it is within the memory of many now living that the vast network of railway transportation has been developed. It is not to be wondered at that an industry, which, although it has developed so wonderfully, is yet far from perfect. Certainly no railway manager would appear before you today and pretend that railway transportation in this country or in any other country, was perfect; nor that as railway managers we did not have a great deal to learn, but we may fairly ask you to judge us by what has been done and what we are honestly seeking to do, giving due consideration to the difficulties in the way.

An interesting feature about railway transportation is that in no other way could a vast continent far away from the sea, and much of it from any waterway, have been developed and peopled. In no other way could great inland cities have grown up. Suppose, for example, the city of Chicago with its two million inhabitants, had to depend on what could be transported by wagon for its supplies; its radius of supply would be at the most not to exceed fifty to one hundred miles. Obviously enough, there would not have been enough food, enough fuel or enough of many other things to supply such a population. As it is, Chicago receives its grain from a radius of fully two thousand miles; its meat supply from an even larger radius, its fruit supply from Florida and Cuba in one direction, Southern California in another, Oregon and Washington in another; and so I might continue.

Transportation facilities have always tended to level down prices, and make them less liable to fluctuation; thus, we can not have in this country the terrible famines which have existed in Russia, and some of the countries of Asia, because the shortage in one section of the country would be quickly made good by the abundance elsewhere, nor does any community depend on its supplies from immediately adjoining territory. If a combination through its ownership, we will say, of coal mines in a certain district should undertake to force up prices of coal from that district, the coal from other districts and other kinds of fuel, such as fuel oil, would soon come in to level down the excessive charge. In fact political economists have frequently remarked that although as a Nation we stand for *protection*, we represent in fact the greatest free trade experiment that was ever known; forty-five sovereign states and many territories compete in each others markets to an almost unlimited extent. It is a friendly competition, it is true, and we have become so accustomed to it that we hardly realize it, but no one locality can so far take advantage of its geographical position that it can put the "screws" on any other locality. In Europe, particularly in Germany, the effort in the way of transportation has been entirely in the direction of building up a great internal system of water ways. Railways are used there to carry the product of the mine, forest and farm, to the nearest point on the seaboard, or to some large river or canal, thence these products are carried by slow going canals, either to the city where they are used or reloaded on cars at some other point and brought inland. A student of the transportation facilities in Germany is struck with the fact that this method, developed under Government auspicies, has tended to build up large cities with water facilities, while the inland country has suffered. What would have been the fate or the great State of Iowa if that policy had been advocated in the United States. And yet, even to this day, Government effort, both National and State, has been in the direction of developing water ways, and for some unaccountable reason, the public ignores the fact that even the great waterways that nature gave us, are used to a very limited extent.

The name of Mr. Lincoln, our Martyr President, is interestingly connected with the development of Railway Transportation, and the building of the first railroad bridge across the Mississippi river, at Rock Island in 1856.

The steamboat interests and the citizens of St. Louis and other Mississippi river points, protested most emphatically against the construction of the bridge, and a bill was filed by citizens of St. Louis, in 1858, to have the bridge, which had just been built, removed. On April 3, 1860, the United States District Court for the District of Iowa, decided that the bridge was a material obstruction and a nuisance, and *ordered it removed*. An appeal was taken to the Supreme Court of the United States, and Mr. Lincoln appeared as counsel for the Bridge Company. In his argument Mr. Lincoln admitted that the bridge was an obstruction, but claimed that it was *not an unreasonable* obstruction; that the river and the railroad were both great highways for the people, and as such, were entitled to consideration. Mr. Lincoln's clear preception of the rights of the case was evidently sufficient to convince the Supreme Court, for the decision of the United States District Court was reversed.

But even Mr. Lincoln's prophetic perception which lead him to think that at some future day, within the lifetime of his hearers, the railroad bridge might carry a traffic equal in importance to that of the Mississippi river, did not foresee at all the immense development which really came. In rapid succession other bridges were built across the river, and, as you undoubtedly know, any one of them carries far greater tonnage than is carried by the Mississippi river. Today only one line of steamers, and that, I am told, not a profitable one, is plying on the Mississippi river north of St. Louis, and the transportation on the river which is handled at best only in the summer months, and when the stage of water is sufficiently high, bears no share in the expense to which the Federal Government must annually go for the maintenance of a safe water way. In fact, there is a very common misapprehension as to the cost of transportation by water. The reason the cost of transportation by water has seemed so cheap on canals and rivers has been that the Government foots all the bills for maintenance of the water ways, and charges no interest on its expenditure. The great State of New York, which is now about to expend a hundred million dollars in deepening and widening the Erie Canal, does not charge against the cost of transportation on that canal any of the expenses of maintaining the canal, nor interest on its cost; nor does the Government charge against transportation on lake or on the sea the cost of lighthouse service, life saving service, harbor improvements, and many other expenses which might be mentioned.

"The railway facilities in the United States have been built almost wholly by private enterprise. They have been built by enterprising people, with the hope of a good return on the investment. In fact, the greatest period of railway building and activity has always followed the period of greatest profit in the undertaking. There was a period in the life of the State of Iowa of almost ten years when there was practically no railroad building. That period immediately followed a period of hostile legislation and consequent hard times in the railroad business. I need not appeal to practical men that no great business undertaking would ever grow if there was no profit in it. Men would not raise corn or stock in the State of Iowa if there was no profit in the undertaking, and you can not expect men to invest in railroads if there is no profit or return for their capital. Indeed, what surprises foreign students of our railroads more than any other one thing is the fact that our railroads have developed so rapidly with very small return for the capital, the actual return at the present time being only about four per cent on the total capital invested. It is true that some of the most prosperous railroad companies in the country have paid as high as eight and ten per cent dividends, the latter chiefly in New England. In the State of Iowa there are several trunk lines which have returned to investors, six, seven and even eight per cent on the money actually invested, but some of the railroad mileage in the State is paying no dividend. I dare say that some unkind critic may say that I am not allowing for what is frequently spoken of as "watered stock," but this is not so. There has been some stock watering, and some of it has been bad. The investing public has suffered by it more than anyone else. But if the watering of stock is to be considered, it is only fair to remember that the reverse process has frequently taken place. In other words, the capital of many railway corporations represents less than the actual money invested. Take, for example, the Burlington company. Many miles of what now forms the Burlington railway were originally built, proved unprofitable to the owners, went through a receivership, and were finally bought at a greatly depreciated value, and put into the Burlington System at this greatly reduced price. What is true of the Burlington is also true of many other lines. The great Pennsylvania System and many other great systems of the country have rebuilt and improved their lines without equivalent addition to their capital account, so that their roads represent in value more than the capital shown on the books, and so largely is this so that our railroads in the United States show an average capitalization of something like $65,000 per mile, although this represents, in many cases, double track, three track and four track railroad, and this capitalization is equal to about one fourth of the capitalization of most European roads. It may be safely said that the few instances of stock watering, which I do not pretend to defend, are insignificant as compared with the reverse condition, about which the demagogue does not speak, and which as yet is not recognized by any particular name or process. As against the railways which may be earning covetously high rates of dividends, many railways can be cited which pay no dividends whatever, and which have defaulted or are ready to default upon their bonded indebtedness.

Railway managers recognize that they are in the public eye. The courts have repeatedly stated that while railways as capitalized in the United States are private undertakings, they have public obligations, whch make them *Quasi-public*, to use the legal phrase. Railway managers must expect criticism, but the hardest criticism is that which comes from those who know the least. We are all of us looking for criticisms and suggestions from those who have really studied the question, and who know it. The difficulty is that we have to take it very often from those who jump at conclusions with very insufficient knowledge or data.

"There is one feature of railway transportation which is of interest and that is the effort that is being made to cheapen it, an effort which follows along precisely the same lines which have been found necessary in ocean transportation, river transportation, canal transportation, wagon transportation, namely; increasing the units of transportation, and efficiency of those units."

When I was a boy, the "Great Eastern" used to be spoken of as the greatest ship that had ever been built; in fact, she was so much larger than any ship then plying the ocean that she was considered unmanageable, and it was supposed by many that her equal would never be built again. I presume there are today fifty to a hundred steamers entering the harbor at New York which have very much greater carrying capacity than the "Great Eastern," and some of them considerably longer, as well as wider and deeper.

In order to reduce the cost of transportation on railways, it has been necessary to reduce the gradients; to use larger locomotives, and make cars of larger capacity, and today the horse-power of our largest locomotives is about equivalent to the horse-power of the great walking beam Corliss engine exhibited at the Philadelphia Centennial Exposition, which drove all the machinery at Machinery Hall. Those of you who remember this engine (which is now to be seen driving the Pullman Car Shops at Chicago) will remember that the engine alone, without the boiler, seemed to be a monstrous affair. Since then we have learned to develop in much more compact space, an equal horse-power.

But you may ask me what is the object of reducing the cost of transportation. The object has been two fold: First, without reducing the cost of transportation with the higher cost of wages, higher cost of material, and especially fuel, with the higher cost of our sleepers, or ties (because the country is fast becoming denuded of its forests) every railroad in the country would go into bankruptcy; secondly, railroad transportation officers have discovered that as they reduce rates they create business.

In order to explain this matter, I might return for a moment to my illustration about the supplies required by a great city. The distance from which its supplies will be drawn depends upon two factors: First, the transportation facilities (that is to say, the service which is available), and second, the cost of the service.

I need tell no man in this room that the price which he will get for his grain or his livestock on his farm in Iowa is the price at Chicago, or Kansas City, or St. Louis, or some other market, less the cost of transportation to that point, and by cost of transportation I mean, of course, not only the railway freight charges, but all the expenses incident to the movement of the grain or the stock from the farm to the market. Now, obviously, the better the facilities grow, and the lower the rates are, the further will Chicago or any other market reach out for the products of the mine, forest and the harvest field. As a case in point I might cite that not long ago a movement of grain was started from the State of Oregon for the Chicago market. The farmers of Oregon were able to take advantage of the high price of wheat at Chicago, because of the transportation facilities which the railways were able to offer them. In former times, the grower in Oregon was dependent wholly on the Liverpool market and on the sea-going rates around Cape Horn.

I have touched on several phases of my subject, and there is a good deal more that might be said along the same lines, but I wish to say a word about another matter in which you will perhaps be interested; that is the relation of the transportation interests, and especially the railway transportation interests in developing the country. We have in the employ of the Burlington railroad a man whose sole duty it is to look after the interests of the railroad in developing business along its lines. He is called the Industrial Agent. He is concerned not only in finding manufacturing concerns who wish to locate on our line, but very particularaly in studying the conditions in the country through which the railroad runs and ascertaining in what way the products of the country may be developed and increased.

"The splendid work of the Department of Agriculture at Washington, and the agricultural schools, (notably in the State of Iowa, has the most cordial endorsement of the transportation interests, and I need hardly dwell on any phase of this question as you are to hear from Prof. Holden this afternoon on the subject."

The transportation interests so far as they are represented by the railroad companies are certainly in full accord with the efforts of the farming community. We realize that when we promote their ultimate interests we are promoting our own interests, and I wish for my part that we could get together more often to talk over more freely and fully, matters of mutual interest.

MR. PRESIDENT: Are there any questions any gentlemen wishes to ask? If not, we will hear a further discussion by Mr. H. C. Nutt, Superintendent of the Iowa Division C., B. & Q. Ry.

## REMARKS BY MR. NUTT.

*Mr. President and Gentlemen of the Agricultural Convention*—Mr. Delano in his paper has covered so completely the growth and development of railroad transportation in this country, that I feel there is comparatively little left for me to say. But one phase of the problem which I consider of great importance and which I also feel is quite generally misunderstood, I thought I might discuss briefly to our mutual advantage. I refer to the element of competition which years ago was an active one between different individual railroads, but which to my mind was changed very radically within the last fifteen or twenty years.

Prior to the Civil War the State of Iowa had only a few short struggling railroads, extending a short distance into its territory from the Mississippi River, and the exigencies of the war stopped almost entirely any development until after its close. At that time the development of this territory attracted great attention and immigration to a very large degree, and as the result of that immigration these few struggling railroads began to extend their lines still further west, and in less than ten years after the close of the war there was not only several lines completed entirely across the State but they had begun to stretch out their branches or feeders in a direction that promised the return of a meager traffic. The result of the extension of these lines was so conclusively beneficial to the immediate localities in which they were located, that other localities which had been missed for one reason or another, immediately began to offer inducements to these railroads to extend to them, and as one railroad had been demonstrated to be of particular value to a community, the conclusion was reached, without serious consideration, that two railroads would be better. The result of it was there was a very general movement throughout this State to induce railroad development in advance of the needs, and to a very considerable duplication of railroad lines, and this was carried to such an extent that the people, whether wisely or not, donated large sums of money, and in some instances the Government donated large areas of land to promote this extension. At that time the competition between these individual lines was very keen and unquestionably did affect the welfare of the community served by them, and indirectly value of their lands. Since, however, the State has become so abundantly supplied with transportation facilities the element of competition has taken on an entirely different aspect and the only competition now which is of value to you as owners of Iowa land and as producers of grain, stock and other farm produce, is the service which the Iowa railroads as a whole may give you in the matter of transportation of these products, compared with the service which transportation lines of other countries and regions give to the inhabitants of these regions for their products, and the market for their products. In other words, the farmers of Iowa and the railroads of Iowa are partners in trying to produce and deliver in the world's markets such products as we raise at the very lowest price. If we can do that, as against the competition of the wheat growers of Russia and India, the sheep raisers of Australia, and the cattle growers of South America, it is to redound to our mutual benefit. If we can not do that, and the men who are interested in the transportation of other countries can produce cheaper than we can produce and deliver, the benefit is to be with those people. It seems clear to me that the interests of the farmers of Iowa and the railroads are identical. Whatever we can do to lower the cost of transportation of your products, virtually lowers the production to you. The elements which make up the labor cost is a very large element; fuel is another one; and in recent years the prices of these have increased to us a very marked extent. The result of that is that we have to devise methods by which we get more service out of the labor and fuel used; whether we have been successful in that or not events will prove. If we can continue to make transportation cheaper, without materially impairing its efficiency, we feel that we are doing the very best thing that can be done for you.

When men who are purchasing transportation from us, and in saying us, I mean, not one railroad, but the railroads of Iowa as a whole, they frequently feel, and often with justice, that they really are receiving less than they pay for; that they get discourteous treatment from agents; their live stock makes poor runs; it is delivered on the market later than it should be, or than it ought to be. Now, these things the railroad companies or the operating officers are quite as anxious to prevent or avoid as any shipper can be, and I feel that I have voiced the sentiment of the officers of Iowa railroads in general, when I say, in case you do have unfortunate experiences of that sort, that no one will welcome intelligent complaints or criticisms of the service which we render, more cheerfully and value it more highly than the officers who are running the railroads and are responsible for the results, and our one aim is to make the results the best we can for you, for your benefit and for our satisfaction.

THE PRESIDENT: This question is now open for discussion. Are there any questions anyone wishes to ask?

A MEMBER: I wish to ask a question about this industrial agent. I understood the gentleman to say, he was traveling along their line to hunt up business. I would like to know whether he ever ran across a delegation of farmers at some certain point, for the purpose of putting up grain elevators?

MR. DELANO: I think he has.

Question: How does he act when he gets there?

MR. DELANO: I am sure that he would entertain a proposition for a grain elevator at any station. It depends just somewhat on what the conditions are. We have a great many stations where there are two elevators already, and where it does not seem necessary to put up a third; where there is no more grain to be produced; where there is no need for an additional elevator. I also desire to say, the gentleman I refer to is not here today, because he is with a seed special in the State of Nebraska, and that we expect to run a similar special in the State of Iowa, and hope for the co-operation, and know we shall have the co-operation of Professor Holden and other gentlemen connected with the Agricultural College, and with the Department at Washington. What we are anxious to do, is to see if we can increase in any way possible the productivity of the Iowa soil, mines and manufactories.

MR. AMES: I would like to make a little statement and ask a question at the end of it. A short time ago I was in Chicago, talking to one of the heads of Swift & Co. I asked him what they made on their investment, if it wasn`t 13 per cent on $25,000,000 capital. No, it wasn't. How near to it? Well, 12½ per cent; 12¾, I think he said. How much is capital and how much is name? What do you mean, said he? How much money is invested in the business and how much do you charge for Swift & Co.'s name? He said, there is $17,000,000 invested in the business and the balance is for the name, for drawing interest on.

Now, isn't there a good deal the same element running through the railroad company's business, when the people buy their land grants, in making the interest on the investment today? The question I want to propose,—these industries, that have accumulated in the shape of trusts and combinations, etc., that are in my mind, taking more than their legitimate profit, are they not made possible by the private car system now in vogue on all the railroads through the State of Iowa?

MR. DELANO: I will say for Mr. Ames' benefit that the railroad transportation companies, or any other business concern, is not seeking means of giving away its money. People talk about rebates, paying excessive mileage for the use of private cars, all that sort of thing, as if they thought we were falling over ourselves to give away money that we take in. There is nothing of the kind, I can assure you, Mr. Ames.

In the first place, the only reason we use the private cars of Armour, Swift, or anybody else`s private cars, is that we could not get their business if we didn't take their cars, and unfortunately we are not strong enough to do otherwise. Second, we are common carriers and take anybody's business. If a consignment of business amounts to millions of dollars, no transportation company can stand away and say, no, we'll not take it. There is a company who does not handle private refrigerator cars, which built a lot of their own. But they are peculiarly situated and have a very large fruit business in southern California. They are able to ignore the owner of a private refrigerator car. But it is all a matter of competition.

I think that perhaps the managers of a dozen railroads could get together in a room not as big as this, perhaps, and say, we will now stop paying mileage for private refrigerator cars; but the interstate commerce law says it would be in restraint of trade. We have never been able to put our names to anything legal or binding in that respect, and the consequence is the owner of private cars, or the man who controls any vast amount of business, is able to go to some railroad and say,—now, we will give you all our business if you will handle it and give us a cent a mile for the use of our cars. There is no one of us alone strong enough to stand up against that sort of thing. I say, you gentlemen have made that thing possible. You have been so afraid that railroads would get together and do wicked things, that you have prevented us from defending ourselves.

Mr. Wallace: I think Mr. Delano could illustrate this whole matter if he could take his pencil and tell us what he gets for hauling a car load of beef from the Missouri River to Chicago, and then tell us what he gets for hauling a car load of cattle from the Missouri River to Chicago.

Mr. Delano: I wish I could. There is no living man can tell for certain how much he gets for hauling anything from anywhere else. If you can tell me how much it costs to haul a passenger from Chicago to Omaha, I will answer the other question. If we have one hundred and fifty passengers in that train, does it cost us any more to get one hundred and fifty-one?

The whole question is a very difficult one and one of averages. Personally, I do not think there is as much net money in the high class business, so-called packing house products, meat or live stock, even, as there is in our low class business. Why? It is because we have to give such a different quality of service in the case of high class business from what we do in low class business. Theoretically, that ought not to be so. We ought to receive more net money for hauling live stock or meat, than for coal or grain, but we do not, because we can haul the grain and coal in much larger cars; get a great many more tons in a car; we can put more cars in a train, a great many more tons in the train, we can do the business a great deal cheaper than we can this high class business, live stock and meat.

MR. WALLACE: You can tell us how many tons or pounds you haul of dressed beef from Kansas City or Omaha to Chicago. I believe that the load of a refrigerator car is about eighteen thousand pounds, and that the total weight of a refrigerator car is about the same, of dressed beef. Now, the rate of dressed beef from Missouri River to Chicago, when destined for eastern shipment, is eighteen and one-half, which makes, as I understand it, about $33.60 for that haul, and from which is to to be deducted a cent a mile each way, or an average of about $10, making it about $23.60, or such a matter, as a net return for that haul. Now, when you come to put in twenty-three thousand pounds, then the rate is twenty-three and one-half. Suppose you deduct from that the general haul for the usual rent for a cattle car, about $6, you get about $48, or twice as much as you get from the dressed beef company.

Now, there is a little history to this. Away back in 1890, this matter came before the Interstate Commerce Commission. The Interstate Commerce Commission, after a hearing, ordered the railroads not to charge more for cattle than for dressed beef. Then it was all put down to 23½ cents. And it was then the railroads began giving rebates until it amounted to 15½ cents. Here is where Stickney came in.

Now, how does this bear upon the farmer? Simply, the railroads have been making a combination with the beef trust and they have built up a trust to Chicago and eastern points that is absolutely the most dangerous trust in the United States, and so dangerous that Mr. Delano would rather face anything than a member of the beef trust company. It is this discrimination, not in favor of the individual, but in favor of a line of business as against the farmer's line of business of which the farmers complain.

There is a great deal, Mr. Delano says, that has my hearty approval. I am glad to see railroad men in farmers' meetings. These gentlemen have told us how they have improved the facilities of the road and have gone to this great expense of millions—so has the North-Western—in order that they might cheapen transportation. Eight or ten years ago I was talking with Judge Hubbard. We were discussing this Gulf course, and I told Judge Hubbard they had better get busy. He says, I will tell you, we are going to put about two and a half feet of ballast on the North-Western; we are going to put on 94-pound rails, so that one of our Mogul engines can haul 40 cars or 40 tons of grain from Omaha to Chicago, and we can then make more money at ten cents than now. You have done all this. How much have you reduced our rates on hogs and cattle? They were 23½ cents then and they are 23½ cents now; 23½ cents half way across the State of Iowa, and yet you have reduced the rates to the other fellow.

We agree with you all upon your general line of policy, except possibly the watered stock. I have been in the habit for some years of attending the meetings of the Executive Council, and it is astonishing how cheap railroads can be built. It is astonishing how much railroads cost at one time and how cheap they can be built at another. I head a man claim the Minneapolis & St. Louis road was worth $15,000 per mile; the next time he came around he said it could be built for $4,000. Take, for instance, here we have the Rock Island stocked at fifteen millions; presently it goes up to seventy-five millions, and over night, to two hundred and twenty-two millions. Take the case of the Q. I think the Q probably has as little watered stock in it as almost any other road. But a strange manipulation was made, doing away with stock altogether, giving two dollars worth of bonds for a dollars worth of stock, thus following out a policy peculiar to finance, and getting just as much capitalization in the shape of a bond and as little as possible in the shape of stock, where the men are taking the risks.

These are the questions that affect Iowa. We understand the value of railroads; we understand the necessity of co-operation; we appreciate the idea of an Industrial Agent. Let me say to Mr. Delano, if he will send his industrial agent to Glenwood, he will probably hear some stories there, and he will probably find out how to develop the apple industry there so as to get more freight for the Chicago, Burlington & Quincy.

MR. DELANO: I do not know whether you want me to take up the time of the convention. The gentleman has made several queries, and it will take longer really than I would like to take to answer.

In the first place, in regard to the rates on meat. I do not think we are getting enough, and we are not getting as much as we would like to have. The point on that is, the Great Western made an open rate; it wasn't any secret rate; made an open rate and a contract for a number of years at 18½ cents. It was a question whether we would take any business at all or meet that rate. Now, we are all of us human. If you can not make as good a margin on the sale of something you are producing as you think you ought to have, if you can make anything at all, you will say, well, that is better than nothing; I can not afford to keep this stock over for another season, or something like that. That was the position the railroads were in. The railroad that brought that condition of affairs about is the railroad that is not paying any dividends whatever; it is not paying any interest whatever on a good many of its securities. It is the railroad that cuts the rates and makes competition. That is just what they did for us exactly.

MR. WALLACE: Isn't it a fact that that deal Mr. Sickney made you follow up actually gave you about 15 per cent more than you were getting beforehand?

MR. DELANO: No, sir; it cut our rate five cents. The gentleman stated that a load of a refrigerator was about eighteen thousand pounds. The average weight in a refrigerator car of meat is about twenty-two thousand to twenty-four thousand pounds, and the packing house product about forty thousand. So that our average on meat is a good deal better than on cattle and hogs.

I appeal to you to the testimony given by Mr. Stickney, who has been in the railroad business longer than I have, and who in his opinion, argues there is a good deal more money in transportation of meat in private refrigerator cars than in the transportation of stock, and that I don't agree with him does not prove that he is not right and that I am. He gives his reasons in full: he gave them for the Interstate Commerce Commission; they are all printed where you can see them.

There is one feature of the meat business which makes it cheaper in some respects to handle than the stock business. The Burlington is a big stock road, and we are glad to get all of it we can. But the meat business all originates from one or two points, so that when trains start out from Kansas City or Omaha and goes through to Chicago it is a solid train. On that class of business we can afford to work closer than we can on business we have to go and gather up from station to station, and which goes to all sorts of different gateways. We are shipping stock now on our road, to seven different markets; whereas, the meat goes practically all to Chicago, or eastern lines via Chicago.

On the subject of stock watering, that I dwelt on in my paper, and the gentleman spoke of—supposing the old Rock Island road was sold to a syndicate and that they issue a lot of paper certificates for it, and those new issues are not earning any money; they are still dependent on the old Rock Island road for what it can earn, and I don't see that anybody gets hurt by that deal, except the fellow unfortunate enough to dabble in the stock market; and by the same process the original holders of the Burlington stock had a proposition of that kind put up to them. It was not my fault they accepted it. They were told they could exchange stock which would pay 5, 6 or 8 per cent dividend; for every one dollar of stock they could get two dollars in a thing called a bond. Now, what was that bond? It was not a mortgage bond; it was simply what they call in finance a collateral trust bond. That meant, if the Chicago, Burlington & Quincy paid 8 per cent on its stock, that bond paid 4 per cent. If the Q didn't pay 8 per cent on its stock, the deficiency would be made good by the guarantors of that bond, which were the Northern Pacific and the Great Northern roads. I appeal to you in frankness, that is not stock watering at all. If you were holders of stock you simply had an option of giving it up or holding it. Ninety-seven per cent gave it up and exchanged it for this collateral trust note or bond. Every cent the Chicago, Burlington & Quincy is earning goes back, and if we only earn 7 per cent, we only pay 7 per cent. So far as the stock is concerned, it is precisely the same, only the people who owned it changed the form of their certificates.

A MEMBER: Does it cost more to start an engine from the Missouri River and pick up and get a full load, or to start out at the Missouri River and haul a full load?

MR. DELANO: Not much; the train crew might be a good deal longer on the road than the train starting with a solid load at Omaha. The cost of the stock business where we are gathering it up from branches, is a great deal more expensive; we gather it up from everywhere; we drain the country as does a stream.

A MEMBER: May I ask you another question? Why is it that Iowa feeders can not get as favorable feeding rates as others can in other states.

MR. DELANO: I can not tell you. I didn't know that was a fact, if it is a fact.

A MEMBER: I will give you an illustration. We have a farm in Nebraska and one in Iowa. Last fall we were figuring on buying a bunch of calves at Wray, Colorado, taking some of it through to Iowa. We found we could get a through Chicago rate at seven cents, but in Iowa we paid the local rate on top of it, which made a difference of fifteen cents to the Iowa feeder. That is the point we would like to get at.

MR. DELANO: I wish I knew; I wish I could tell; I don't happen to know about that. I don't know that the gentleman has ever asked for it: if he didn't get it I know he would get a very good reason for it. We do not knowingly do something for the State of Nebraska that we do not do for the State of Iowa.

MR. VAN HOUTEN: I believe it is usually conceded by everybody that railroad rates should be remunerative. It looks to me like all matters ought to be taken up in forming a basis of computation; not only that, but the question of absolute equality between places and individuals. Let me give you an illustration. I bought a valuable animal; he was to be shipped from one railroad to another at Des Moines. When the animal arrived at Des Moines I received a telegran from the Q agent that a first class fare should be purchased before the animal would be transferred. I immediately telegraphed to Des Moines to have the animal shipped over the Great Western to Knowlton, to get the animal and bring it home. But not being able to hear whether it had been delivered, I got on the train and came to Des Moines. When I got here I found that the animal had been sent on, and of course, was delivered and taken home. I entered a complaint with the agent, but no attention whatever was paid to it. I entered a complaint with the Railroad Commissioners of Iowa; after about eight months they informed me the railroads had agreed not to do that any more.

I see advertised in the city of Des Moines; I see it in Creston, Council Bluffs and elsewhere, that on the third and first Tuesdays there would be one rate plus two dollars to go to certain points. Now, that rate is either remunerative or it is not. If I want to start out on Monday or Wednesday, the man who starts out on Tuesday pays a lower rate or I pay too much. These things published in the papers over the signature of the agent must be true. These things are remunerative or are not remunerative.

A MEMBER: I appreciate what Mr. Delano says about the criticism that comes from that. I would like to relate an experience that seemed quite ridiculous to me. I recently moved to Minnesota, and assumed with the newspaper I am working with a sort of a position similar to this Industrial Agent. I am aware that the conditions of live stock are very much better in Iowa and Nebraska than in Minnesota and Wisconsin. I was endeavoring to bring an excursion party to visit certain farms in Iowa and Nebraska; also a beet sugar factory at Norfolk. I thought I would be able to get up an excursion party. I went to one of the railroad managers and asked him what he could do for us. He says, how many will there be in your party. I said I thought I would be able to get about twenty-five—had several letters from parties stating they would go providing the expenses would not exceed $20. I said to the general manager, I think you can afford this, because our party will certainly buy some cattle. Well, he says, we can not do it. We can not give you anything more than a local rate from point to point. He says, if you were a Sunday school party, or a picnic party, or football squad we could give you excursion rates, but cattlemen, we can not do it. We went to another road and we got a fare and a third, but they said it was purely arbitrary. This seemed quite strange to me; I was quite in the dark; it wasn't any comparison with a powerful trust, but rather in competition with Sunday school parties.

MR. AMES: I do not want to occupy too much time, at the same time I want to bring out as many points as possible. The question of percents has been touched upon in the paying of dividends. I want to make a statement; does anyone know what amount per cent the average Iowa farm is paying on the investment? What do you suppose farming is paying, less operating expenses, the net profits? Do you suppose they pay eight per cent? Do you suppose they pay seven, six, five or three per cent? The majority of them stop between three and five. Many of them are paying more, but they are equipped by large combinations and handled under the head of syndicate affairs.

If Mr. Delano will just recall our nice little talk and visit in Chicago not long ago, he will remember the committee there went over the grounds of delayed transportation, and it seems to me that is one of the vital points to be made at this meeting and one of the things these general managers of the different roads can take up. Not many years ago the time limit for the transportation of live stock from points, central and western Iowa, were from three to six hours shorter than at the present time. I think Mr. Delano will remember we showed conclusively that that was a detriment to the average shipper of Iowa of not less than three dollars an hour for that delay. Today you ride on a stock train over Iowa, and the train will occupy ten hours across the state; the train men complaining because they are not allowed to make the run, often times waiting at stations. Now, if Mr. Delano and the other managers of roads will take that up separately, and is there any reason why it can not be done or has not been done, Mr. Delano.

A MEMBER: I was twenty-four hours riding across the state of Iowa Saturday, from 7 o'clock Saturday night, starting from Sac county, and arriving at Clinton at 7 o'clock Sunday night, and getting to Chicago at 2 o'clock. Before the Chicago & North-Western had a double track, they would make eighteen or twenty miles an hour. Now they call on us to load at 7 o'clock in the evening, and sometimes at four, and give us a thirty-six hour run, making a shrinkage on every head of fifty pounds; we are giving from fifty to sixty pounds of beef in these long runs; the statistics show that we are losing that. They said they were surprised; they didn't know it was quite so bad.

MR. DELANO: Gentlemen, I wish some of you had to manage a railroad. The fact of the matter is, if you ever managed a railroad so that you could keep all passenger and freight trains on time and make the time satisfactory to all your patrons, you could congratulate yourselves. I can assure you, Mr. Ames, of this, that there is no cause of delayed movement that is not investigated, and we think we are making improvement in that direction all the time.

Mr. Nutt went into considerable detail in this matter, and I thought was quite convincing. It is true, Mr. Wallace referred to the fact that the rate on hogs has not been reduced over a certain territory for a number of years. As I say, there is a very small margin in handling live stock.

Another party asks why it is that we make lower rates for parties or people going on certain days of the week, or for home seekers' excursions. Can it be that I will have to explain that we can afford to do on a wholesale basis something we can not afford on a retail basis? Can it be that in the cities and towns you live in, that you have not noticed that during holidays and other times you have noticed the sales marked down? That is what these low rate excursions are—in order to attract people who will not otherwise go. If you can get up a particular hurrah boys excursion, then they will go. It is not that the rate of one fare plus two dollars is remunerative. If we can get enough people to go on certain trains it is remunerative. We have to draw the line somewhere, and the ordinary line at which we draw it is at 100; we just thought 100 was about a fair number; that is the way a great many managers figure. This particular man, the gentleman referred to, he gave a rate of one and one-third for twenty-five.

MR. WALLACE: In answer to Mr. Delano's remarks in regard to special sales, I would say, these excursions they are getting up at one fare plus two dollars, are not special sales. It is generally something that is about to go out of season; it is something that is about to go out of date. It is something that is on the shelf we want to get rid of and convert into money; that is absolutely at a discount; they are in a hurry to run off. It is not so on these Tuesday excursions.

There is another thing I wanted to call attention to. You know, every man in this audience, that throughout the breadth of Iowa, at every station, we have from one to three elevators. These elevators in many instances are owned by what is called Line Companies, and in a great many instances the people managing these elevators have become non gracia to the people. The people organize themselves together and form a farmers' elevator company; they wish to build an elevator there to handle the grain, so that they can do their own business, and why is it, that in every instance where the farmers want to build an elevator at one of these stations in Iowa, it universally has to be carried to the Railroad Commissioners in order to get a site? I would like to have that explained.

THE PRESIDENT: I will say in answer to the gentleman, that he can get all the elevators he wants if he will move down on the Burlington route.

MR. WALLACE: I believe that Mr. Delano is right when he states the load of a refrigerator car to be from 22,000 to 24,000. I notice that in the hearing before the Interstate Commerce Commission it was given as 29,000.

THE PRESIDENT: Professor P. G. Holden of the Iowa State College at Ames will now address you on the subject of "How to Increase the Average Yield of Corn Five Bushels per Acre."

The Professor gave a valuable illustrated talk on the above subject, after which the meeting adjourned. His address and the discussions which followed, were not taken by the reporter, owing to the frequent reference to charts. In lieu of this we publish on the following pages bulletin No. 77, from the Iowa Agriculture College experiment station, on "Selecting and preparing of Seed Corn," which is edited by Professor Holden and contains the greater part of the information brought out in his address:

Professor P. G. Holden.

# BULLETIN 77. MARCH, 1905,

EXPERIMENT STATION
IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS
AMES, IOWA.

# SELECTING AND PREPARING SEED CORN.

## DEPARTMENT OF AGRONOMY.

BY P. G. HOLDEN.

The condition of seed corn throughout Iowa this year is such as to cause the gravest apprehension. Personal examinations of corn in every section of the State have been made and the Station is now making extensive tests of samples sent in for germination.

There seems to be a general impression that, since the corn apparently dried out well last fall, there will be no danger of having poor seed. The fact is that there has seldom been so large a percentage of the corn which was killed. Frequently one ear will be good and the very next one poor: one side of the ear may be alive and the other one dead and, of two neighboring kernals on the same ear, one will grow and the other will not.

This peculiar condition is probably due principally to three causes. First, the season was slow and the corn did not mature properly and, as a consequence, there was an unusually large amount of moisture left in the corn. The shrinkage experiments, which have been carried on by the Station, show that the corn contained an average of about thirty-six per cent of water at the beginning of the cribbing season. Second, the dry weather during October dried the corn off and it appeared to be dry when in reality it was not. Many were so confident that the corn was dry and would keep, that no pains were taken to store it in a dry place. Third, the unusually cold weather during the latter part of November and first of December either killed the germ or weakened it greatly, except where the seed was protected or where unusual pains had been taken to dry it out thoroughly.

Seed corn that was stored in a dry place, such as the attic, before the 20th of October, is in good condition except in some cases where the corn moulded or grew, or both, from the lack of ventilation.

When we consider that more than nine million acres, considerably over one-fourth of the entire erea of the State, is planted to corn each season and that it requires more than 1,300,000 bushels of seed to plant this area and, when we realize that the character of the seed, its vitality, breeding, purity, adaptability to the soil and climate and uniformity in both size and shape of the kernels, all exercise a great influence on the future yield, the great importance of paying the closest attention to the corn for seed purposes can not be over estimated.

### CONDITION OF SEED CORN.

Up to the present time, March 6, over 2,000 samples of seed corn have been received by the Experiment Station from farmers in different portions of the State. These are all being put through a careful germination test and over seventeen hundred have now been tested. This large number of tests show that an average of nineteen per cent is entirely dead and that an additional twenty-one per cent is low in vitality and unfit to plant, leaving only sixty per cent of good seed. It is also apparent that many of the kernels which give a fair germination are weakened and, in the event of a cold spring, would either refuse to grow or give weak plants.

The following is a page taken from the records of germination of samples received for testing. It is an average of all the samples and shows the wide variation between samples from different persons. Sample No. 783 is entirely worthless for planting, while all of Nos. 791–792 gave a strong vigorous germination.

The headings of the tables have the following meanings:

Strong—The kernels gave a strong, vigorous germination and appeared as if they would make strong productive stalks.

Weak—The kernels germinated but were not vigorous and, if the season were unfavorable, they might not grow at all; but, if they did, the stalks would be weak, perhaps produce only nubbins.

Worthless—Did not germinate.

(For an illustration of these three classes see Figure 4.)

| Sample No. | Strong. | Weak. | Worthless. |
|---|---|---|---|
| 781 | 92 | 8 | 0 |
| 782 | 8 | 40 | 52 |
| 783 | 0 | 20 | 80 |
| 784 | 56 | 28 | 16 |
| 785 | 80 | 16 | 4 |
| 786 | 80 | 8 | 12 |
| 787 | 72 | 12 | 16 |
| 788 | 52 | 40 | 8 |
| 789 | 52 | 28 | 20 |
| 790 | 52 | 32 | 16 |
| 791 | 92 | 8 | 0 |
| 792 | 100 | 0 | 0 |
| 793 | 24 | 16 | 60 |
| 794 | 64 | 24 | 12 |
| 795 | 60 | 24 | 16 |
| 796 | 68 | 16 | 16 |
| 797 | 60 | 36 | 4 |
| 798 | 28 | 40 | 32 |
| 799 | 64 | 20 | 16 |
| 800 | 60 | 20 | 20 |
| Average ............ | 58.2 | 21.8 | 20 |

### POOR STAND OF CORN.

A ''poor stand'' of corn is responsible more than anything else, for the low average yield in the central west. The ground may be rich, the preparation good and the corn receive the best of cultivation, but if the stand is poor, the yield will be correspondingly poor.

Careful counts of the number of stalks per hill were made last year in more than a thousand different corn fields and it would be safe to say that there were not to exceed sixty-six per cent of a perfect stand on an average and in some cases it fell as low as forty per cent. This means that the State devoted nearly 9,000,000 acres to corn and produced only a 6,000,000-acre crop, or to put it another way, with a perfect stand the present average yield of thirty-two bushels would be increased to fifty bushels per acre or an increase to the State of 153,000,000 bushels. This does not take into consideration the increased yield made possible through the use of improved varieties, better bred seed, elimination of barren stalks by means of breeding, better methods of cultivation, etc.

The real seriousness of the situation will be more apparent from the following counts illustrating the stand in the poorer, medium and better fields of Iowa. The following figures illustrate the number of stalks per hill in the poorer fields: 2 2 2 0 3 2 0 1 3 0 1 1 1 3 1 1 0 2 3 0 1 2 1 0 0 2 1 3. Each of the first three hills had two stalks, the fourth hill was missing and the next had three stalks, etc.

That the results might be as accurate as possible, counts similar to the above were made in three places in each field. The hills were taken just as they came in the row and generally crosswise of the way the corn was planted. The field above represents only fifty-two per cent of a stand of corn. Twenty-five per cent of the hills were missing. Thirty-five per cent had one stalk. Twenty-five per cent had two stalks and twenty per cent had three stalks per hill. If the poor stand was largely due to seed of low vitality, which is generally true in case of very poor stands, then the same influence which killed a portion of the seed must also have greatly weakened that which did grow and, as a consequence, the yield is even much less than what is represented by the stand.

The above represents what is found in hundreds of cornfields everywhere in Iowa. Many fields were found in which the stand was as low as forty per cent. The following will illustrate very closely the average stand in the State: 2 3 1 2 1 0 1 1 3 3 1 3 1 2 2 2 3 0 3 1 2 0 2 1 2. On the average soil of the State this would represent about sixty-five per cent of a stand of corn. Twelve per cent of the hills were missing, twenty-eight per cent of the hills had one stalk, thirty-two per cent of the hills had two stalks, and twenty-eight per cent of the hills had three stalks. The following represents the stand in some of the very best fields in the state: 3 4 3 2 1 3 3 3 3 2 3 3 3 3 2 3 3 3 3 3 3 3 3 3. In this field, there was no hills missing, four hills had one stalk, twelve had two stalks, seventy-six had three stalks, and eight hills had four stalks.

This represents not less than ninety-five to ninety-six per cent of a perfect stand.

If we go into our fields at husking time and make a study of the stand of corn, we will be convinced of the serious losses to ourselves and to the State each year from a poor stand of corn.

## VARIETY TEST OF CORN.

Last spring, the Agricultural Department secured seed from more than ninety different sources. The corn was all collected from farmers living within a radius of ten miles from Ames. In order to secure samples of corn actually planted, the farmers were visited and the corn taken either directly from the planter boxes in the field or from the sacks from which the seed corn was being planted.

The samples were planted by hand, three kernels per hill, and the experiment was repeated three times and treated alike in every respect, throughout the season.

The following table gives the yield per acre of the six highest yielding samples and also of the six lowest yielding samples:

| Six Highest Yielding Samples. | Bushel Per Acre. |
|---|---|
| Sample No. 59 | 80.5 |
| Sample No. 58 | 80.0 |
| Sample No. 66 | 78.5 |
| Sample No. 71 | 77.0 |
| Sample No. 138 | 75.0 |
| Sample No. 68 | 75.0 |
| Average | 77.5 |

| Six Lowest Yielding Samples. | Bushel Per Acre. |
|---|---|
| Sample No. 44 | 31.5 |
| Sample No. 132 | 33.5 |
| Sample No. 36 | 34.5 |
| Sample No. 32 | 36.6 |
| Sample No. 29 | 37.5 |
| Sample No. 33 | 40.0 |
| Average | 35.6 |

Note particularly the wide range in yield from 80.5 bushels per acre to 31.5 bushels, or a difference of 49 bushels. The average yield of the six highest samples was 77.5 bushels, while the average of the six lowest yielding samples was 35.6 bushels, or a difference of 41.9 bushels per acre.

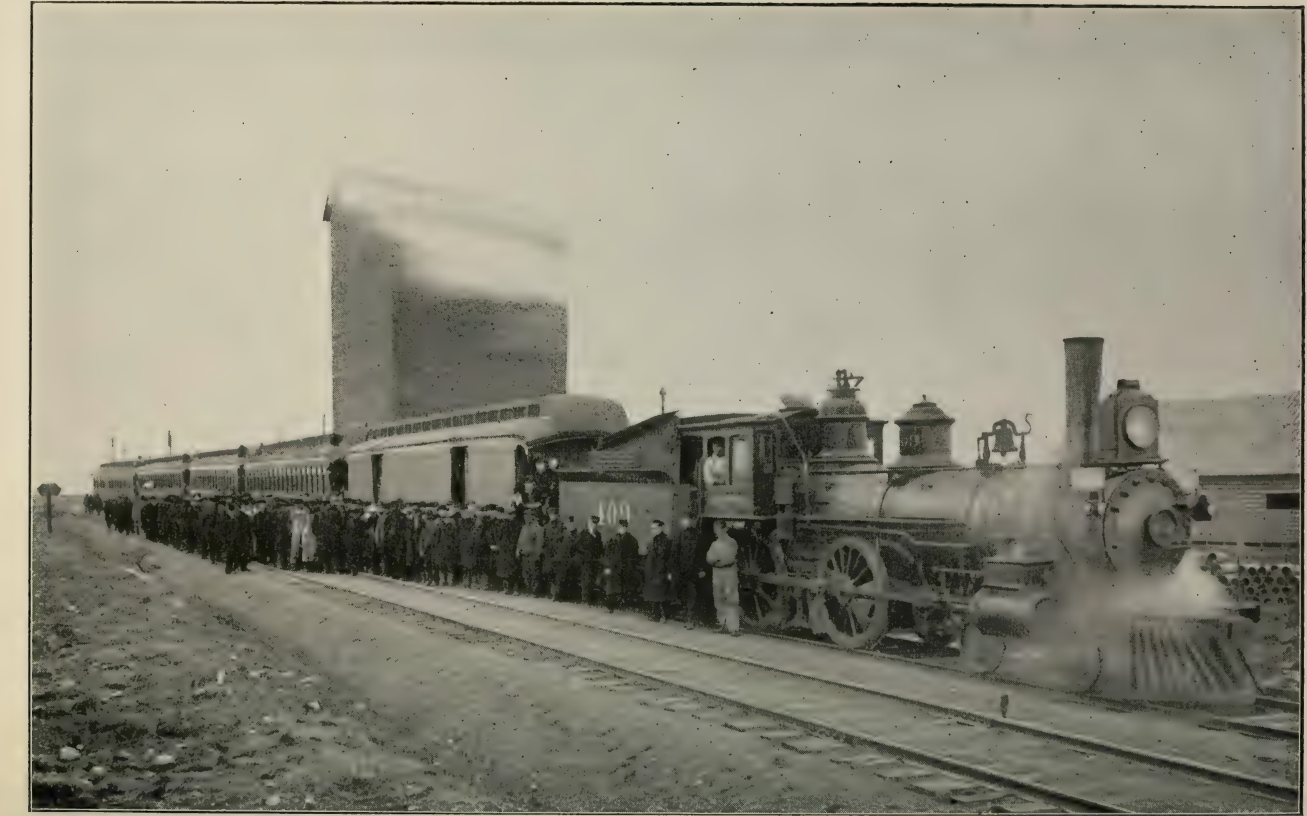
This great difference in yield was due largely to the difference in vitality of the seed, as in every case the low yielding samples had given a poor stand. It strongly emphasizes the great importance of knowing that the seed to be planted will give a good, strong, vigorous germination.

## TESTING EACH EAR OF CORN.

There is, perhaps, no one thing which will do so much to increase the yield of corn on every farm as the testing of each ear to be used for seed. This should be done before the rush of spring work begins or it is apt to be neglected.

The importance of discarding ears that refuse to grow or show a weak germination is apparent when we realize that one ear will plant one-fourteenth to one-sixteenth of an acre.

The most practical way for testing the germination of each ear is by using a germination box. This is a simple affair and can be made by anyone in an hour's time. Any box about six inches deep and 2x3 feet in size



Scene of an audience at stop of Iowa Corn Special.

may be used. Fill the box about half full of moist sand, dirt, or sawdust, well pressed down, so that it will leave a smooth, even surface. In case saw dust is used it should be put in a gunny sack and set in a tub of warm water for half an hour so that it will be thoroughly moistened before using. Take a white cloth about the size of the box, rule it off, checker-board fashion, one and a half inches each way. Number the checks 1, 2, 3, and so on and place it over the sawdust and tack to the box at the corners and edges. Lay out the ears to be tested, side by side on the floor; remove one kernel from near the butt, middle and tip of the ear; turn the ear over and remove three kernels from the opposite side, in like manner, making six kernels in all, thus securing a sample from the entire ear. Place the six kernels at the end of the ear from which they were taken. Use care that the kernels do not get mixed with the kernels from the ear next to it. After the kernels are removed, boards may be laid over the rows of corn to keep them in place until the germination is known. (See Figure 1.) Place the kernels from ear of corn No. 1 in square No. 1 of the germination box; from ear No. 2 in square No. 2, and so on with all of the ears. Then place over this a cloth considerably larger than the box; cover with about two inches of moist sand, dirt or sawdust and keep it in a warm place where it will not freeze. The sitting-room will perhaps be the most suitable place. The kernels will germinate in four to six days. Then remove the cover carefully to avoid misplacing the kernels in the squares (a piece of thin cloth placed over the kernels before the covering is put on, will prevent the kernels from

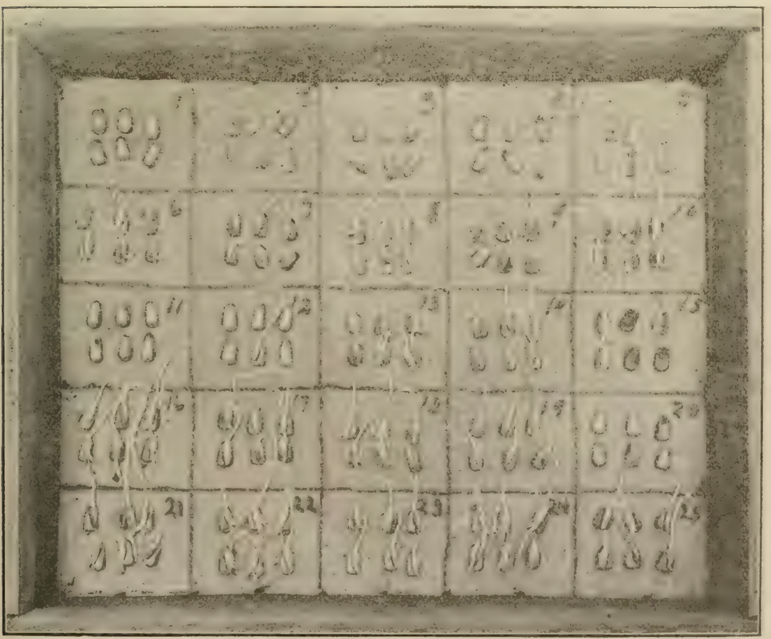


FIG. 1. GERRMINATION BOX.

sticking to the upper cover). Examine the kernels in the germinating box; for example, the kernels in squares Nos. 1, 11 and 20 (see Figure 1) have failed to grow and some of the kernels in squares 2, 3, 4, 9, 12, and 15, have refused to grow or show weak germination. The corresponding ears should be rejected. The ears showing weak germination should be treated the same as worthless ears.

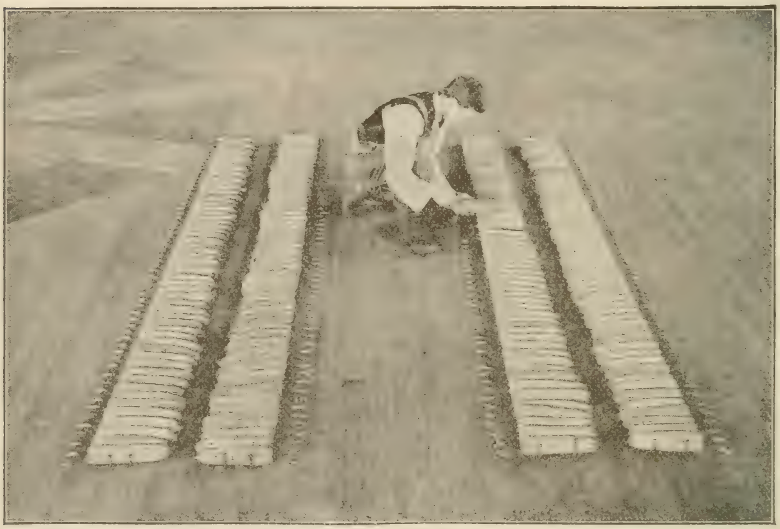


FIG. 2. TAKING SIX KERNELS FROM EACH EAR.

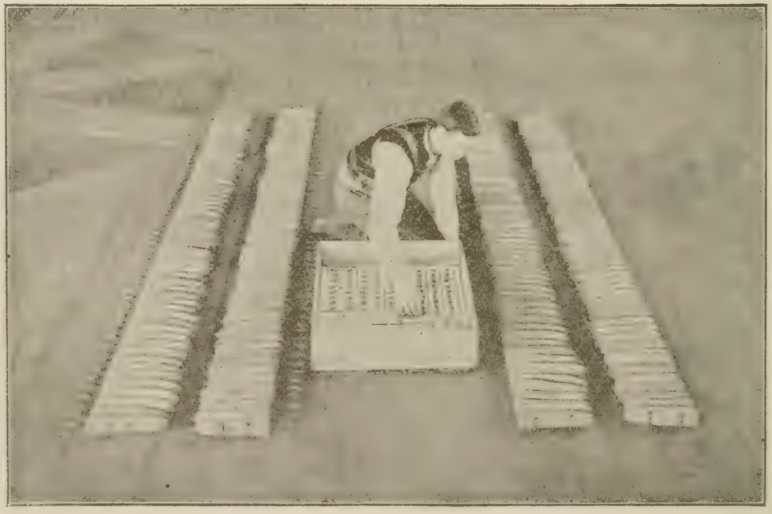


FIG. 3.

Figure 2, the kernels are placed on the floor opposite the ear from which they were taken. Before removing the kernels from the ears, it is a good plan to drive two nails at each end of the rows of corn to hold the ears in place.

Figure 3, putting the kernels in the germination box; placing those from ear No. 1 in block No. 1; from ear No. 2 in block No. 2, etc.

The germination box was filled about half full of thoroughly moistened sawdust. A cloth ruled off into blocks or squares was then placed on the sawdust and fastened at the corners and edges by tacks to hold it in place.

To prevent the ears from being disturbed while the test is being made, it it is a good plan to place a heavy board or plank over each of the rows of ears.

### RECORD OF INDIVIDUAL EARS.

Maximum yields can be obtained only by using the best seeds of the best varieties. These seeds can be secured only by careful selection and breeding. Last spring the most perfect kernels from 102 of our best ears of corn were planted in rows side by side, each row being planted with kernels from a single ear. At husking time each row was harvested by itself and the record of yield, barren stalks, broken stalks, suckers, etc., of each individual ear was thus secured.

The following table shows the wide variation in the results obtained from the different ears:

### RECORD OF INDIVIDUAL EARS:

| | Ear No. | | Bu. per A. |
|---|---|---|---|
| Bushels per Acre | 75 | Yielded 90.56 bushels per acre | 90.56 |
| | 93 | Yielded 36.06 bushels per acre | 36.06 |
| Per cent of Stand | 77 | Gave 96.5 per cent of a stand | 83.03 |
| | 73 | Gave 43 per cent of a stand | 36.27 |
| Number Broken Stalks | 54 | Gave 258 broken stalks or 64 per cent | 67.52 |
| | 85 | Gave 41 broken stalks or 8 per cent. | 76.57 |
| Number Barren Stalks | 19 | Gave 79 barren stalks or 21.5 per cent | 50.50 |
| | 83 | Gave 6 barren stalks or 1.5 per cent. | 75.85 |
| Number of Suckers | 37 | Gave 106 suckers or 21 per cent | 77.93 |
| | 75 | Gave 0 suckers | 90.56 |

This record illustrates very clearly the great difference in the producing powers of different ears. Some ears produce more than six times as many broken stalks as others. Other ears seemed to be predisposed to barenness. For example, ear No. 19 gave 79 barren stalks while ear No. 83 gave only 6. The variation in the number of suckers was still more striking, ear No. 37 giving 106 suckers while ear 75 was entirely free.

Ears 47 and 83 (47 is not given in this table) are also very interesting by way of comparison. The rows planted from these two ears had practically the same number of stalks. Ear 47 produced 55 bushels per acre. It had 67 barren stalks, 244 broken stalks and 62 suckers. Ear 83 yielded 76 bushels, had only 6 barren stalks, 130 broken stalks and 5 suckers.

The figures illustrate clearly the wide range in two ears, not only in producing power, but also in their tendencies to reproduce inherited qualities.

The following diagram shows the yield in bushels per acre of the ten highest yielding rows in our breeding plats. The five lowest yielding rows and the average of the entire one hundred and two breeding rows are also shown:

### RECORD OF INDIVIDUAL EARS.

| Rows | |
|---|---|
| 75 | Yielded 90.58 bushels per acre. |
| 72 | Yielded 87.49 bushels per acre. |
| 84 | Yielded 87.20 bushels per acre. |
| 92 | Yielded 84.11 bushels per acre. |
| 77 | Yielded 83.03 bushels per acre. |
| 25 | Yielded 82.43 bushels per acre. |
| 70 | Yielded 81.14 bushels per acre. |
| 64 | Yielded 80.66 bushels per acre. |
| 21 | Yielded 80.36 bushels per acre. |
| 96 | Yielded 80.23 bushels per acre. |

### FIVE LOWEST YIELDING VARIETIES.

| | |
|---|---|
| 93 | Yielded 36.06 bushels per acre. |
| 73 | Yielded 36.27 bushels per acre. |
| 86 | Yielded 42.31 bushels per acre. |
| 74 | Yielded 42.38 bushels per acre. |
| 80 | Yielded 43.24 bushels per acre. |

The average of the ten highest yielding rows was 83.71 bushels per acre; the average of the five poorest yielding rows was 40.05 bushels per acre. The 102 rows grown yielded on an average 67.09 bushels.

### BREEDING PLATS.

While it is not advisable to grow a large acerage of any new or untried variety, the farmer should find out what variety is best suited to his conditions. This can be learned only by growing small plats of the most promising varieties. When the most suitable variety has been secured pure seed should be obtained and the best ears planted on one side of the field. It is preferable to have this breeding plat on the south or west side of the field, that the prevailing winds may not carry pollen from the rest of the field on to the breeding plat.

If corn of another variety should be within a quarter of a mile of the breeding plat, the varieties are liable to become mixed. In such a case the breeding plat should be located as far from the other varieties as possible, or if no other protected place is to be had, the selected ears may be planted in the central part of the field. When very little seed corn can be had it may be planted in a block in one corner of the field, for if planted in long narrow strips the pollenation is sure to be poor.

This method of planting the choicest ears on one side of the field is an easy and practical way of securing good corn for the following year. It should be planted early enough to insure its ripening. The weak and barren stocks could easily be detasseled so that only the most vigorous pollen would fertilize the silks. Even if the land received no special cultivation and if the crop received no extra care the grower would know where to secure his best seed ears and would be more likely to harvest them at the proper time than he would if he was depending on the occasional good ears obtained during the husking of his entire crop.

### CORN PLANTER TESTS.

The samples of corn used in these experiments were butted and tipped Iowa Silver Mine, butted and tipped Boone County White and hand selected Mixed White. Five hundred hills were dropped through each planter.

Three kernels in a hill was considered perfect.

#### NUMBER OF TIMES THE FOLLOWING KERNELS WERE DROPPED PER HILL.

*Experiment No. 1.*

| Planter. | 1k | 2k | 3k | 4k | 5k | 6k | % Perfect. |
|---|---|---|---|---|---|---|---|
| No. 1 | 1 | 15 | 469 | 15 | 0 | 0 | $93\frac{3}{5}$ |
| No. 2 | 2 | 35 | 457 | 6 | 0 | 0 | $91\frac{2}{5}$ |
| No. 3 | 2 | 25 | 445 | 27 | 1 | 1 | 89 |
| No. 4 | 4 | 51 | 414 | 30 | 1 | 0 | $82\frac{4}{5}$ |
| No. 5 | 1 | 65 | 337 | 94 | 3 | 0 | $76\frac{2}{5}$ |
| No. 6 | 3 | 137 | 305 | 53 | 1 | 1 | 61 |

*Experiment No. 2.*

| Planter. | 1k | 2k | 3k | 4k | 5k | 6k | % Perfect. |
|---|---|---|---|---|---|---|---|
| No. 1 | 1 | 20 | 468 | 12 | 0 | 0 | $93\frac{3}{5}$ |
| No. 2 | 0 | 10 | 438 | 50 | 2 | 0 | $89\frac{3}{5}$ |
| No. 3 | 2 | 34 | 432 | 31 | 1 | 0 | $86\frac{2}{5}$ |
| No. 4 | 0 | 25 | 422 | 50 | 3 | 0 | $84\frac{2}{5}$ |
| No. 5 | 0 | 64 | 359 | 73 | 4 | 0 | $71\frac{4}{5}$ |
| No. 6 | 2 | 111 | 332 | 54 | 1 | 0 | $66\frac{2}{5}$ |

*Experiment No. 3.*

| Planter. | 1k | 2k | 3k | 4k | 5k | 6k | % Perfect. |
|---|---|---|---|---|---|---|---|
| No. 3 | 0 | 6 | 481 | 13 | 0 | 0 | $96\frac{1}{5}$ |
| No. 4 | 0 | 18 | 473 | 9 | 0 | 0 | $94\frac{3}{5}$ |
| No. 2 | 0 | 20 | 472 | 8 | 0 | 0 | $94\frac{2}{5}$ |
| No. 1 | 0 | 25 | 467 | 8 | 0 | 0 | $93\frac{2}{5}$ |
| No. 5 | 0 | 77 | 350 | 72 | 1 | 0 | 70 |
| No. 6 | 0 | 13 | 274 | 198 | 15 | 0 | $54\frac{4}{5}$ |

Nos. 1, 2, 3 and 4 show results with different makes of edge drop planters, while 5 and 6 show results with planters using the common round hole planter plates.

### SHRINKAGE EXPERIMENT.

This experiment was conducted to determine the amount of shrinkage in corn under ordinary conditions. A small crib holding about one hundred bushels was built on a truck wagon. This was filled with corn during the husking season and careful weights were then taken at the dates indicated. The following table gives the net weights of corn, the percentage of shrinkage to date, and the number of pounds lost between the different number of days. As the tables indicate, the percentage lost by shrinkage to February 27th was 12.60.

| Date of Weighing. | Net weight. | Per cent of shrinkage to date. | Number of days between dates. | Pounds of shrinkage between dates. |
|---|---|---|---|---|
| October 24 | 6016 | .00 | 0 | 0 |
| October 26 | 5932 | 1.39 | 2 | 84 |
| October 27 | 5912 | 1.56 | 1 | 20 |
| October 28 | 5896 | 1.99 | 1 | 16 |
| October 29 | 5872 | 2.39 | 1 | 24 |
| October 30 | 5858 | 2.63 | 1 | 14 |
| October 31 | 5852 | 2.73 | 1 | 6 |
| November 7 | 5732 | 4.72 | 7 | 120 |
| November 14 | 5616 | 6.66 | 7 | 116 |
| November 21 | 5522 | 8.21 | 7 | 94 |
| November 28 | 5492 | 8.71 | 7 | 30 |
| December 26 | 5360 | 10.90 | 28 | 132 |
| January 30 | 5322 | 11.53 | 35 | 38 |
| February 27 | 5258 | 12.60 | 28 | 64 |

TABLE SHOWING DIFFERENT RATES OF SHRINKAGE.

*Varieties.*

| Date. | Reid's from field, per cent shrunk. | Reid's from shock per cent shrunk. | Immature, Reid's per cent shrunk | Winnie's Fav., per cent shrunk. | Mortgage lifter per cent shrunk. | Iowa King, per cent shrunk. | Nashes' Early Yellow, per cent shrunk. | Bloody Butcher, per cent shrunk. | Early White, per cent shrunk. |
|---|---|---|---|---|---|---|---|---|---|
| October | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0. 00 | 0.00 | 0.00 | 0.00 |
| November 7 | 2.13 | 4.46 | 3.30 | 3.20 | 2.47 | 2.66 | 1.23 | 2.33 | 2.00 |
| November 14 | 5.32 | 6.00 | 5.28 | 6 84 | 3.46 | 5.32 | 2.72 | 2.33 | 2.88 |
| November 21 | 7.71 | 7.10 | 6.69 | 8.22 | 5.44 | 7.18 | 4.20 | 6.98 | 3.76 |
| November 28 | 10.68 | 8.93 | 10.57 | 10.50 | 5.44 | 8.51 | 5.18 | 7.90 | 4.87 |
| January 9 | 15.76 | 11.94 | 17.49 | 15.30 | 7.67 | 10.63 | 4.93 | 12.69 | 5.75 |

Table shows the high percentage of moisture contained in much of the corn at cribbing time. Nashes' early yellow was perfectly matured and as a result lost very little in shrinkage. The various samples of Reid's, harvested under different conditions, all contain a very great amount of water.

Table showing shrinkage by months in four leading varieties of ear corn from time it was husked and cribbed in the fall of 1902 for nine successive months.

| Date. | Mammoth Red. Per cent shrink in pounds. | Kegley's Golden Beauty. Per cent shrink in pounds. | Iowa Silver Mine. Per cent shrink in pounds. | Yellow Farm. Per cent shrink in pound. |
|---|---|---|---|---|
| October 25 | 00 00 | 00 00 | 00.00 | 00 00 |
| November 25 | 7.60 | 6.66 | 6.54 | 7.36 |
| December 25 | 9.12 | 7.71 | 8.00 | 8.52 |
| January 25 | 11.40 | 9.82 | 9.80 | 10.85 |
| February 25 | 12.92 | 11.57 | 12.00 | 12.79 |
| March 25 | 14.82 | 13.33 | 13.45 | 14.72 |
| April 25 | 20.53 | 18.24 | 18.90 | 19.37 |
| May 25 | 20.53 | 18.59 | 19.27 | 19.76 |
| June 25 | 22.05 | 20.35 | 20.00 | 21.31 |
| July 25 | 22.05 | 21.40 | 21 09 | 21.70 |

## PREPARING SEED CORN FOR THE PLANTER.

After the germination test, the next step is preparing the corn for the planter. First, by removing the mixed kernels. In yellow varieties it can be done better before shelling and in white varieties after shelling, as the mixed kernels often do not show in white corn until the corn has been shelled; second, by butting and tipping the ears of corn to insure the planter dropping the correct number of kernels in each hill.

To be certain of getting the drop adjusted properly, twenty or thirty ears should be shelled separately and put into grades of large, medium and small kernels. The planter can then be tried with each grade and the proper plates selected for each grade. If the proper plates are not at hand, then those nearest may be calibrated to do the work as desired. This is very essential and it should be done before the rush of spring work begins. A small outlay for additional plates or a new planter may mean the difference between a good crop and a poor one. The planter must do the work properly. After the planter is tested and it is known what grades are wanted, the seed corn should be carefully shelled, put into sacks and properly labeled.

The planter can be adjusted to drop the different grades in a uniform manner, if the grades are kept separate and the proper planter plate used for each grade, but if these different sized kernels are mixed and drop miscellaneously, it will be impossible to secure a uniform number of stalks per hill.

We can not afford to neglect this important work. If every farmer in the State would test every ear of his seed corn this winter in the way described above, the yield would be wonderfully increased. No other time will be so profitable to the farmer as that spent in testing the vitality of his seed and in grading it to ensure the planter dropping the proper number of kernels in each hill. It is possible for every one to do this work. It will cost nothing but the time, of which there is plenty at this season when the work should be done. Every farmer should realize the importance of testing every ear of his seed corn before spring work begins. No possible loss can come from it and it will ensure a good stand of corn, which is absolutely essential, if the best results are to be secured from the year's hard work. One day spent in March on the seed corn, may be worth more than a month of hard work in the field, later. Without good seed, the after labor is of little avail. Nothing is more depressing or discouraging than a poor stand of corn. If the seed is carefully tested and only good seed planted, there are no risks to run, except those made necessary to every one from the conditions of the weather, etc., which can not be controlled. It is during the bad seasons, when conditions are unfavorable that we most need the kernels with large, deep germs of a bright cheerful color well-matured, which will give the most vigorous germination.

It is essential to seek improved varieties of corn, but it is also important that better treatment be given to the seed that is to be planted.

## DO NOT IMPORT SEED CORN.

If the test shows the seed to be weak and unreliable and it is necessary to secure other seed, it should be obtained from some reliable neighbor, who has a surplus.

No farmer can afford to depend upon imported seed for the main part of his crop. If he is unable to secure a variety from his neighbors that has been grown and that has matured well in his locality and it becomes necessary to import seed, it should be secured from the shortest distance possible, east or west, as such seed is preferable to that grown in the north or south, but it is safer to import it from the north than from the south. The southern varieties will produce large stalks and heavy foliage, and the large, deep kerneled ears will be late in maturing. Northern grown corn will be smaller in ear and finer in stalk, but will mature earlier. Seed corn imported from a distance, and especially from a southern latitude, seldom gives satisfactory results the first two or three years, even though the seed be the best, which oftimes is not the case.

It is well known that the most of the seed corn put on the market by seedsmen, is bought of farmers in crib lots, shelled, screened and sacked, ready for sale, little or no attention being paid to the selection. In fact, it is generally handled with a scoop shovel and is known as the "scoop shovel method of selection."

The chances are that the farmer has in his own crib better corn than that which he purchases from seedsmen at four or five times the market prices. Then he runs the risk of it not maturing in his locality.

If it were simply a matter of losing the price of the bushel of imported seed corn it would not be so serious, but when we consider that a bushel of seed corn ought to produce 400 bushels of corn, worth from one hundred and thirty to one hundred and sixty dollars, the serious nature of the question is very apparent.

### SELECTING AND STORING SEED CORN.

One of the best plans is to begin this spring by selecting fifty or one hundred of the very best ears in your seed corn, while you are making the test of germination. These ears should then be butted and tipped and each ear shelled by itself and carefully studied. The kernels should have a bright, cheerful appearance, be full and plump at the tips and have a large clear germ, otherwise they should be discarded. It is very important that this choice seed should be planted at the time of the first planting, putting it on the south or west side of the field, unless there is danger that it would become mixed from some neighbor's corn near by. In this case, it may be put on the other side of the field. The important thing is to get it in early and, if possible, on fall plowed ground. This will allow the corn to become thoroughly matured early next fall. The great importance of this can not be over estimated. It is the late maturing corn that is caught by the breezes, as there is not sufficient time for it to dry out.

All the seed corn for the next crop should be selected from this patch which was planted from the very best ears It is a very common practice to select the occasional good ears found throughout the entire husking season. There are three important reasons why this should not be done. In the first place, we are more likely to neglect the work until too late, when we find ourselves without good seed for the next year. Again, many of the kernels on these good ears selected throughout the entire field or season have necessarily been fertilized by pollen from the scrub stalks and those which are perhaps barren. In other words, we have simply selected a good female, but know nothing of the character of the male stalks from which the pollen came that fertilized the kernels. On the other hand, if our seed is all selected from the seed patch planted only from the very best ears, we are much more certain of good parents on both sides. It is a good practice and one followed by many corn growers to go through this seed patch of two or three acres planted from this thirty or forty best ears of corn, after it has been ''laid by'' and before the tassels appear, and cut out all of the weak and sickly stalks and those that are too tall and late or too short and early and in this way prevent them from producing pollen to fertilize the kernels of other ears.

One of the most serious results from depending on the occasional good ear found throughout the entire husking season is that many of the fields are late and the corn immature and the husks will prevent the corn from drying out properly and, as a consequence, it is frozen before it is husked or, at least, before it has had time to dry out after husking. Again, we often begin harvesting our poorest fields first and delay saving seed until we come to our ''best fields.''

If any advice was to be given, it would be to select all the seed from this ''early seed patch'' not later than October 15th to 20th, taking the most mature ears. They should then be tied eight or ten ears in a string with binding twine, or they may be tied together in pairs and hung on some wires or some strips in an open shed where the sun can not shine on them, but where the wind can have the best possible opportunity to blow through the corn and dry it thoroughly. As soon as dry and before any hard freezes (say November 1st to 5th), take down and store in some place where there is good circulation of air, as in the attic or furnace room, where it will be protected from the severe freezes during November and December.

If it is certain that the corn has thoroughly dried out, it may remain where it was hung in the open shed all winter, providing the sparrows and mice do not trouble it, and there will be no danger of injury from freezing. But in slow, cold seasons, like the past two, where the corn was not hung up before October 20th, the only safe thing to do is to take the corn down and place it where it is protected as stated above. In case the harvesting of seed corn is neglected until November (which should not be done but is too often the case) it should be taken direct to some room where it can be protected from freezing by artificial heat and where there is a good circulation of air.

There are several cautions which should be observed in the storing of seed corn. Do not put immature or freshly gathered seed corn in a warm room on the floor or in piles. It will either sprout or mould, or both. The corn should be hung up and the windows left open for the circulation of air.

Seed corn should not be left in barrels and boxes nor on the floor or porch in piles. It should be properly taken care of as soon as harvested.

Do not store seed corn over the laundry room nor over the stable, as it will gather moisture and be injured by freezing.

The most critical time for seed corn is during the first month after it is harvested, while it is green and sappy. There is danger that it will mould or grow if the room is warm and the circulation of the air is not good or if the corn is put in piles. On the other hand, there is danger of its freezing, unless protected. Corn dries out much more slowly than is generally supposed. The experiments of the College show that corn, which shrunk twenty-six per cent during the year in a small crib, had lost on January 1st, but eight per cent in weight. This corn was put into the crib on October 27th.

Last spring thousands of fields in Iowa were planted with weakened seed. This together with the cold spring and frequently too deep planting, gave poor stands and necessitated much replanting.

The importance of selecting thirty or forty of the choicest ears, planting them on one side of our earliest planted field, can not be too strongly emphasized. Out of this seed patch, the seed for next year's crop should be selected not later than October 20th, and hung up at once where it can dry out thoroughly before any severe freeze.

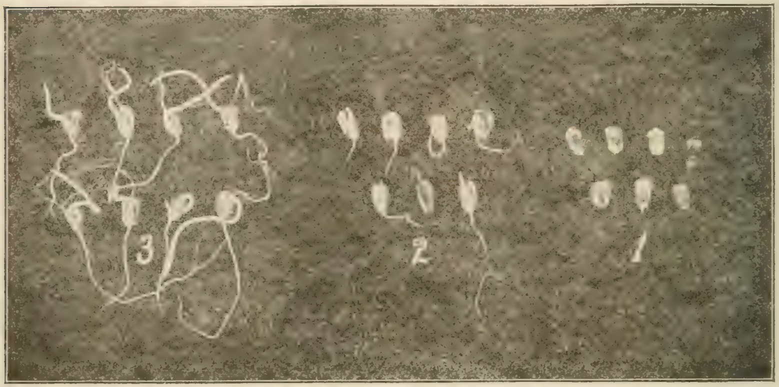


FIG. 4.

No. 1 shows worthless kernels that refused to grow under favorable conditions. On an average nineteen out of every one hundred kernels of all the samples sent in for germination test, up to March 6th, are of this class, and should be discarded.

No. 2 shows weak kernels, which, if put into the ground under unfavorable conditions, when it is cold and wet, will probably fail to grow at all or give weak stalks. Twenty-one kernels in every one hundred give weak germination.

No. 3 shows strong, vigorous germination; of the 2,000 samples sent in, only sixty kernels in every hundred, on an average, showed similar vigor in germination.

These sixty strong kernels if planted alone on a given area, would, doubtless, produce more corn than if planted along with the twenty-one weak ones; for the weak ones producing a weak growth, would use up the light and the air and fertility, which would otherwise go to the advantage of the stronger stalks. Another objection is the fact that the stronger ears would be more or less fertilized by the pollen from the undesirable stalks.

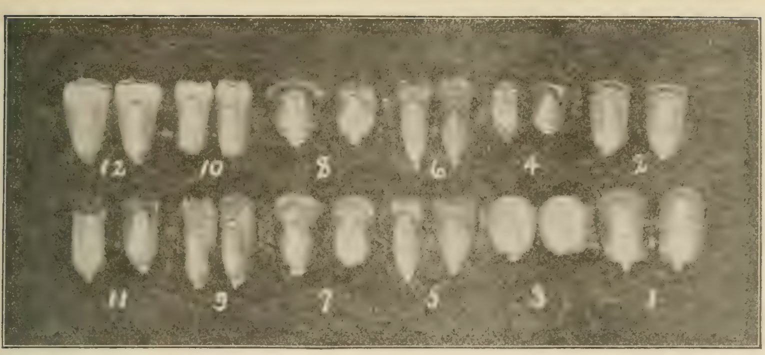


FIG. 5.

The above cut shows good and bad forms of kernels. The pairs of kernels Nos. 1, 2, 11 and 12 show the best forms in order named; while Nos. 5, 6, 7 and 8 show the poorest forms in the order named. Pair No. 1 is the best since the kernels are full and plump at the tips next to the cob and have large germs. Both of these points are important as they indicate strong vitality and feeding value. On the other hand pairs 5, 6 and 7 are especially weak with low feeding value and small per cent of corn to cob.

It will also be observed that these kernels are far from uniform in size and shape (compare Nos. 4, 2 and 6) and hence no planter will drop an even number per hill. (See table of tests.) When we realize that all these kernels were taken from ears that appeared to be good, when examined from the standpoint of the ear alone, we can readily appreciate the importance of paying more attention to the study of the kernels of corn in our seed ears.

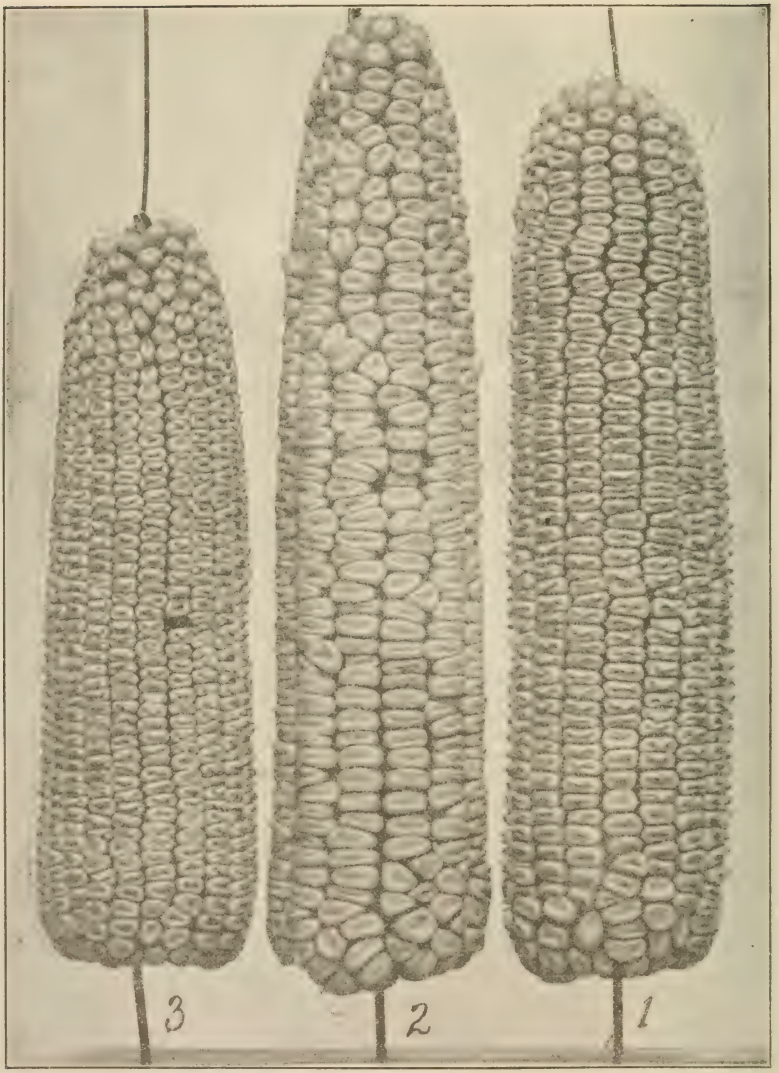


FIG. 6.

DIFFERENT SIZES OF KERNELS.

No. 1 is an ear of medium quality with deep, fairly uniform kernels. No. 2 has broad, thick, shallow kernels lacking in uniformity, while ear No. 3 is a good example of the long, narrow shoepeg type. It would be impossible to so adjust the planter as to drop these different styles of kernels together and secure a good stand. See Fig. 5. As the kernels from

No. 3 are less than half the size of those from No. 2 they would be dropped much more rapidly if an average sized plate were used. Ear 3 has 980 kernels; ear 2, 540; ear 1, 840. If kernels of this type are to be planted they must be shelled separately and suitable planter plates used for each.

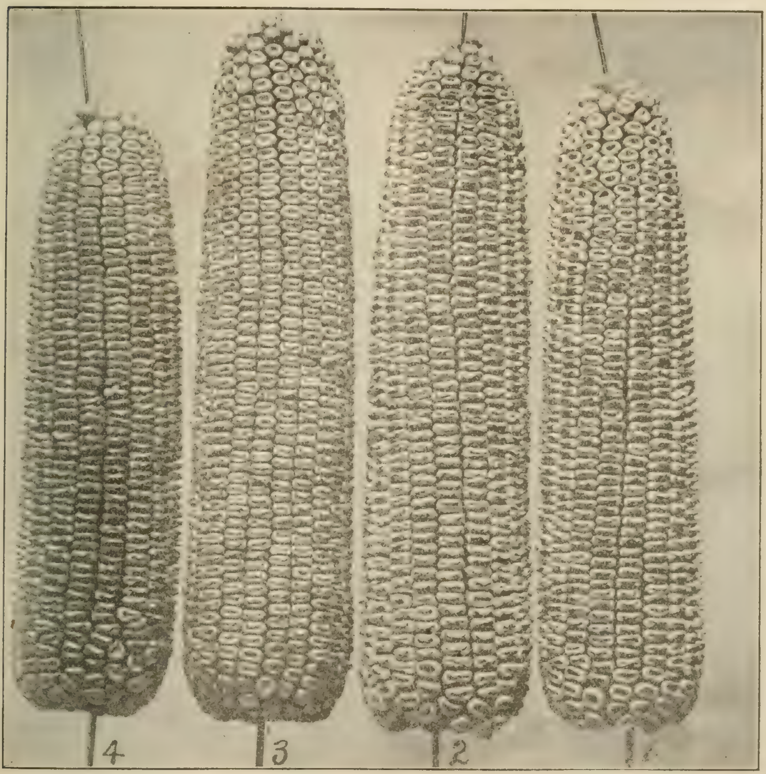


FIG. 7.

GOOD SHAPES OF EARS.

Fig. 7 illustrates good forms of ears. These ears are well proportioned. Their butts and tips are good. The rows are straight and the kernels uniform. The ears are full in the middle parts, showing strength, constitution, and good breeding. It is very essential that an ear show fullness in the middle portion, as this is the place where the greatest quantity as well as the best quality of corn will be found. Ears 1 and 2 would plant well together. Ears 3 and 1 are slightly better in shape than 2 and 4.

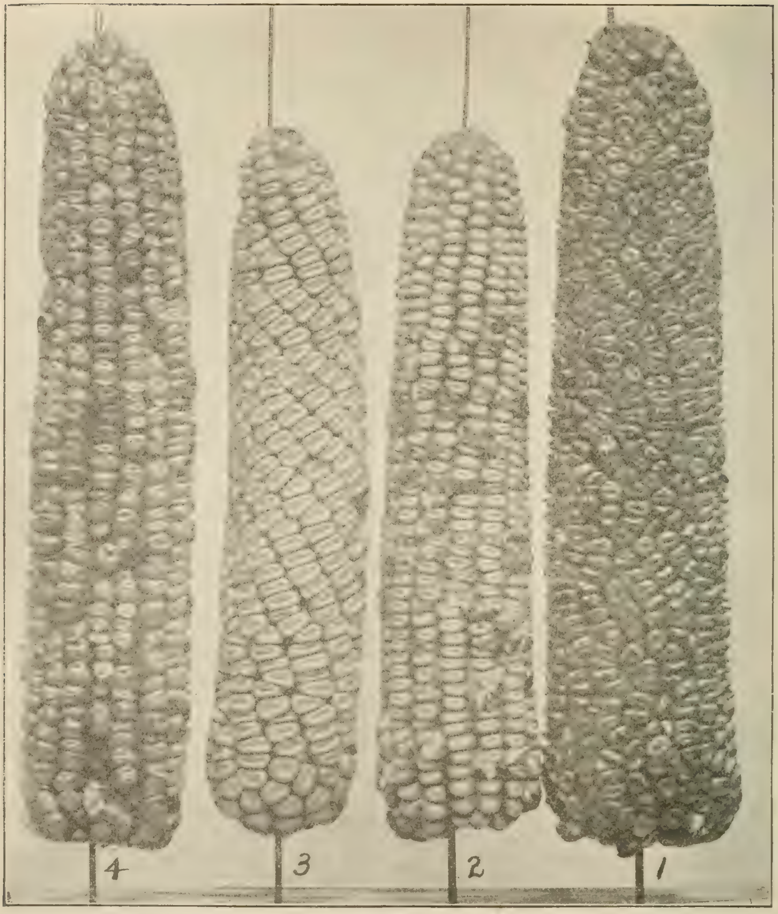


FIG. 8.

POOR EARS.

No. 1 is a fairly well shaped ear, has been fertilized and will give a good proportion of corn to cob. Its utter lack in uniformity of kernels, however, makes it a very undesirable ear for seed. Note the irregularity of the rows, the variation in the size, shape and dent of kernels. Such an ear should never be used for seed.

No. 2 was an early ear but some of its silks were fertilized by pollen from a late variety. Those fertilized by the early pollen produced well matured kernels; those fertilized by the late pollen failed to ripen. A close study of these kernels shows that some of them have lost the entire crown while others have simply burst the skin and exposed the starchy portion. These damaged kernels, being later than the others, were badly crowded and not being so far advanced as their neighbors were forced to grow too long in proportion to their width. The early kernels, having dented, make the late ones appear longer than they really are. The probable reason why these late kernels split open is that being soft and higher than the more matured ones, the pressure of the husks upon the silks held them in such close contact with the crown that the outer covering was weakened and finally burst. As soon as this ear was stored the kernels moulded and in a short time rotted. For further discussion of the disadvantages of kernels maturing at different times see Fig. 10.

No. 3 shows a spiral arrangement of rows with thick blocky kernels, lacking in uniformity. The tip is weak and the whole ear, through lack of proper proportion, indicates weakness and lack of breeding.

No. 4 is especially worthy of notice because of the unusual condition of its kernels. The ear is of good length, showing that the stalk which bore it possessed good constitution. Its kernels, however, are very uneven, weak and low in vitality. It is probable that this ear was late and expended a great deal of energy in throwing out silks in hope that they would be

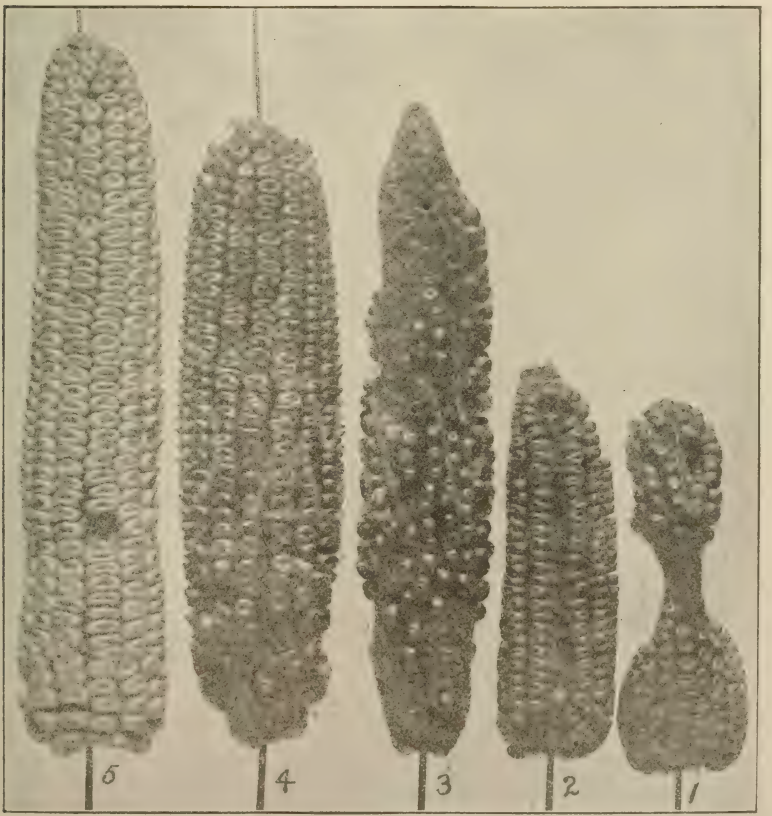


FIG. 9.

fertilized. As it was late and nearly all of the pollen had been shed, the only supply left was that which had lodged on the leaves. This, through age, had become weakened and when blown upon the already partly exhausted silks failed to produce kernels of sufficient vitality to properly fill out and mature.

### FIG. 9—SCRUB EARS—NUBBINS

Late corn has usually more nubbins than that which matures earlier. These ''scrub'' ears are sometimes produced because the silks at the butt of the ear appear so early that there is no pollen to fertilize them. As a result, no kernels are formed on the butt of the ear. No. 4 is a good example of this. No. 3 suffered from the same cause, but, in addition, lacked strength and vitality and so produced very few kernels. No. 2, with its wide space between rows, is a good illustration of a run out ear. While No. 5 appears to be a medium ear it is, in reality, very poor. Note the peculiarly beaked appearance of the crown of the kernels ending in a needle-like projection. This is a sure indication of running out. The shallow kernels and the small circumference in proportion to length are strong indications of lack of contitution.

Ear 4 has sharp projecting points also. Barring the butt, it is a much stronger ear.

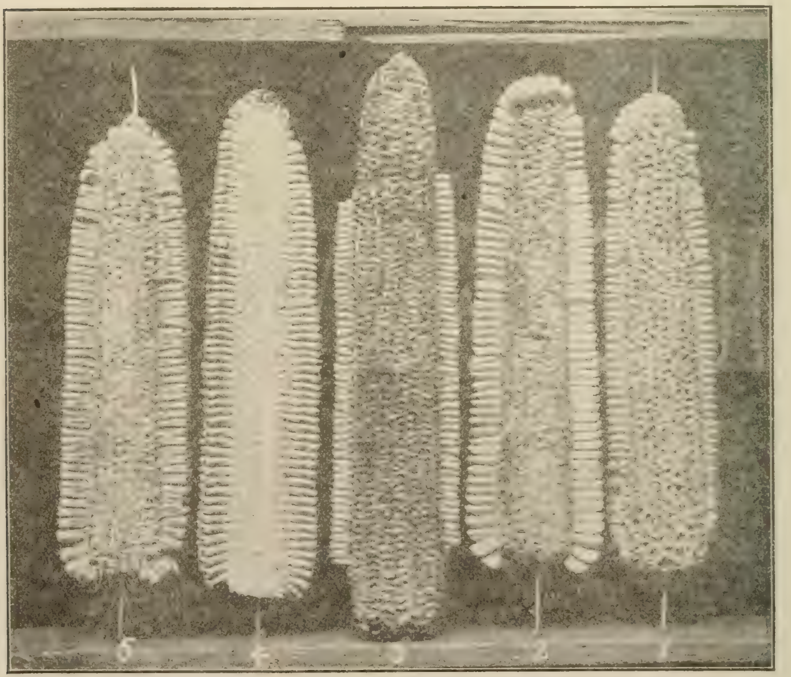


FIG. 10.

The presence of these nubbins greatly reduces the annual yield of corn. Through extreme earliness, or extreme lateness, or owing to lack of vitality they never produce good ears. They receive the same care and cultivation as the good ears and in return yield very little. By carefully selecting only vigorous seed ears we can greatly reduce this loss. In connection with this, study "The Product of a Single Hill," Fig. 14.

Figure 10, Ears Nos. 5 and 2 illustrate ears of corn with good kernels of medium depth. Ears Nos. 1 and 3 illustrate very shallow kernels, and if the kernels from these four ears are mixed it is impossible to plant them evenly.

Ear No. 4 shows space between the kernels at the cob which indicates weak vitality, low percentage of corn to cob and low feeding value, the valuable portion of the kernel not being filled out. When examined externally these ears all appeared equally good. This shows the importance of removing several kernels when selecting seed corn.

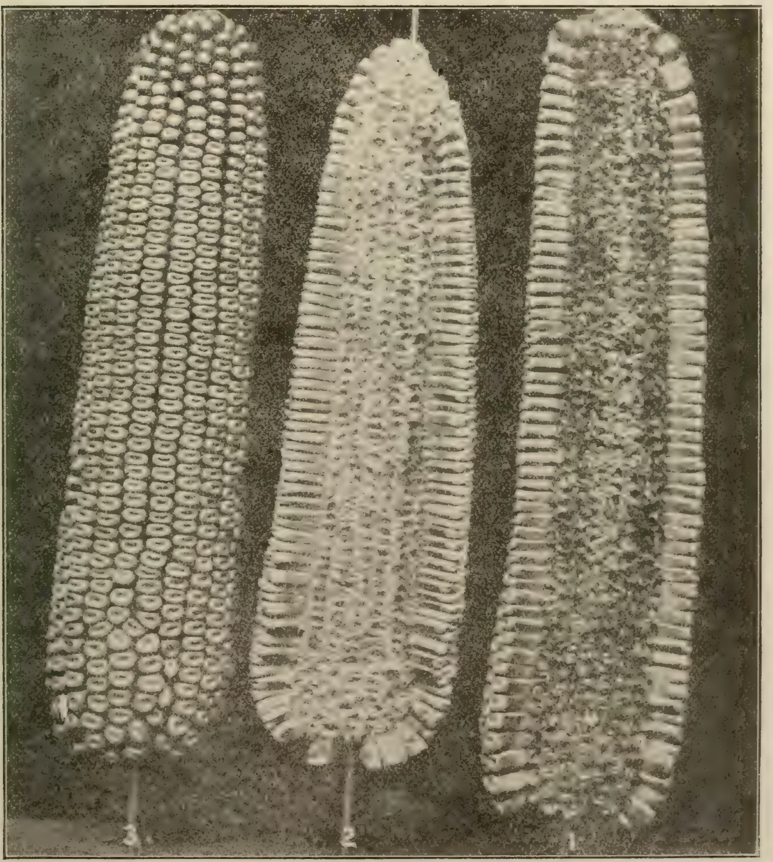


FIG. 11.

Fig. 11, the kernels on ear No. 1 are nearly the same depth from tip to butt, while the kernels of ear No. 2 grow rapidly shorter towards the tip. The kernels on ear No. 3 are small, shallow and flinty, little larger than grains of pop-corn and will run through the planter about like wheat. When these three ears were shelled together and tested in the planter there was a range of all the way from 2 to 7 kernels per hill.

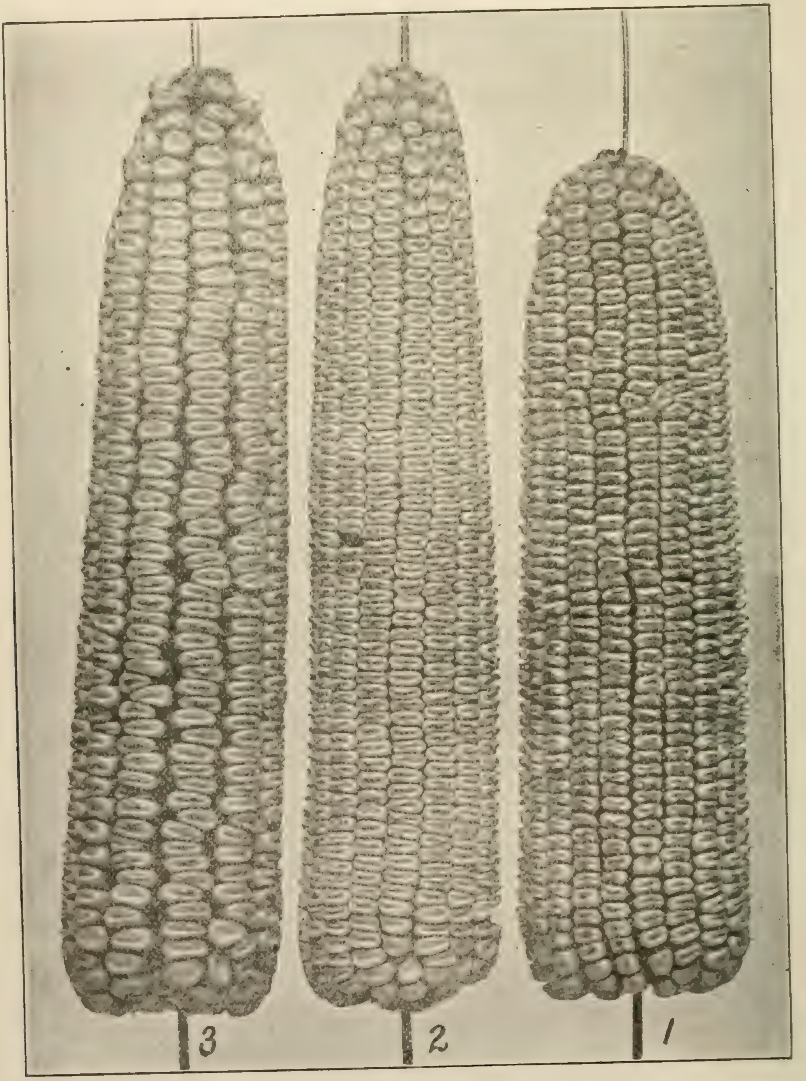


FIG. 12.

FIG. 12—SHAPE OF KERNELS.

No. 2 shows about the proper space to be looked for between the rows, the two middle ones being a little too open for the upper half of the distance. Should the rows fit more closely it would be a disadvantage as the corn would require too long a time to dry out. An ear having very little space between the rows at the crown almost invariably has a great deal of space between the kernels next to the cob, through having narrow pointed kernels. No. 1 shows more space between the rows than No. 2 and the kernels will have less space between them next to the cob. The character of these kernels, however, makes space on No. 1 more admissible than on ear 2, for the reason that the kernels are of a rougher type, are much longer and consequently require more space in order to dry out. The space between the rows at the butt is, however, too great. Ear 3 shows very wide space and a broad, thick but shallow kernel. Ears having such wide space are not necessarily lacking in vitality. It does, however, indicate a running out such as is most frequently seen in corn grown in the extreme north of the corn belt. As the season is short the kernel must take the shallower form with open space in order to mature. No. 2 illustrates a kernel of medium depth and about proper space between the rows. It would be best adapted for the central part of the corn belt, while No. 1, with its deep kernels and wider space between the rows, would be suited for a longer season such as would be found farther south.

These are all good ears and the tendency would be in selecting seed to keep all three of them. This is a mistake. In the first place these kernels differ too much in size and shape, and if the ears were shelled the difference would be still more striking. See Fig. 5. No planter can drop these kernels properly if mixed, consequently we have a poor stand and low yield no matter how rich the soil or how favorable the year may be. If it is necessary to use ears of this kind, separate them into three or more classes and use the proper planter plate for each.

In the second place it is a mistake to plant these three types of ears together, because they will not shed their pollen nor mature at the same time. For effects of this see Fig. 8. If you are so far north that only ear No. 3

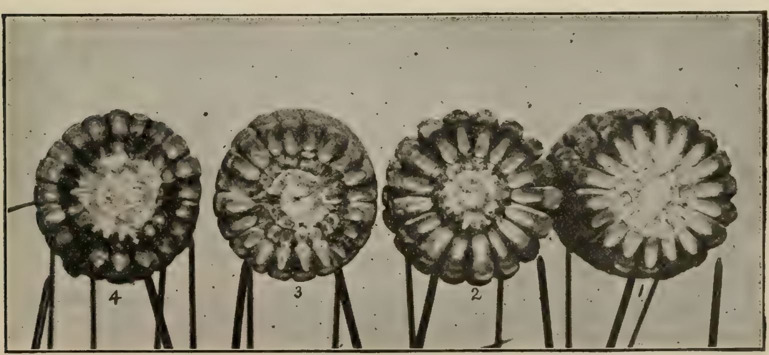


FIG. 13.

will mature, you can not afford to risk Nos. 1 and 2; if far enough south to be sure that No. 1 will mature you are better off without Nos. 2 and 3. The chief reason why Iowa's corn grades so low on the market is because we too often grow the large, deep-kerneled southern varieties which seldom mature here. If we would raise our standard, each corn grower must select only those varieties which mature in his locality. He can not hope to obtain anything like maximum crops if he attempts to grow such widely varying types as the above illustration shows.

FIG. 13—PROPORTION OF CORN TO COB.

Ear No. 1 shows a moderately long kernel on an average sized cob. The kernel has a good full germ with sufficient space between the rows to dry out readily. The proportion of corn to cob is good

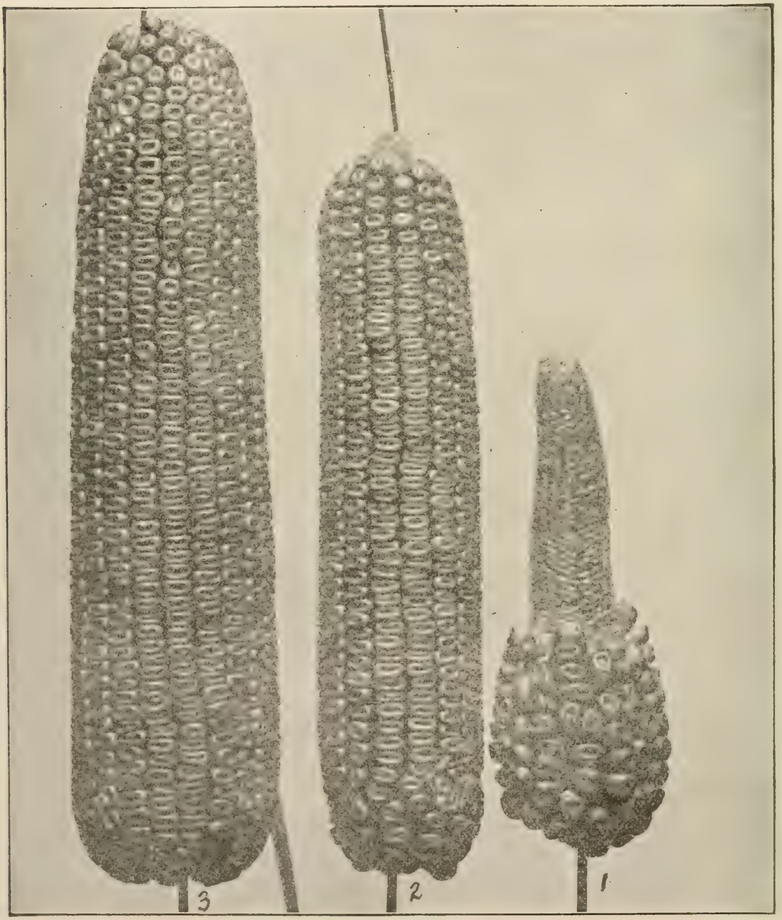


FIG. 14.

No. 2 is an illustration of a deep, long-kerneled corn on a small cob. Such a corn would naturally be adapted only to the southern districts. Its germ, while longer, is not so full or strong as that of No. 1. A kernel so long and thin is always difficult to plant because the ordinary planter is made for the average kernel and not for exceptionally long ones and, therefore, special care will need to be taken to properly adjust the plates so as to drop the desired number of kernels. Kernels of this formation are inclined to be chaffy and late in maturing. The proportion of corn to cob is rather too great. A small cob is desirable, but if it is carried to the extreme it becomes a source of weakness rather than of strength. We can no more reasonably hope to produce an abnormally high percentage of corn to cob than we can to produce large ears on weak, sickly stalks. There is a proper relation or proportion existing between the weight of corn and the weight of cob, and if we develop the corn at the expense of the cob, weakness and loss of constitution will result. While the proportion of corn to cob varies with different varieties it would appear that 86–87 per cent is about the right proportion to give best results.

No. 3 is a more normal ear and shows better relations between corn and cob. The kernels are of medium length, good shape and possess strong, vigorous germs. The crown is not rough, which, taken with the medium depth kernel, would indicate that it was a medium early corn, such as would be suitable for the central districts of the corn belt.

No. 4 shows very short kernels with poor, weak germs. This ear would yield a very low percentage of corn to cob.

### PRODUCT OF A SINGLE HILL.

Fig 14 illustrates what is too often seen in a single hill—a good ear, a poor ear and a nubbin. We have seen this so often that we never stop to think what it means. Why do not all these stalks bear ears like No. 3? Being in the same hill, the conditions of soil, climate and moisture must have been exactly the same. One could not have received more thorough cultivation than another. From the time the corn was dropped there was no good reason who Nos. 1 and 2 should not be as good as No. 3. Why, then, is there this wide variation? Can we do anything to bring Nos. 1 and 2 up to the standard set by No. 3? We can. The difference in yield of these three ears was not due to differences in soil, climate or cultivation. The difference lay behind all this—it lay in the character of the parents planted. If we could locate all the stalks in the field which spring from the brothers of the kernal that produced No. 2 we would find that the great majority of them were ears, on an average, as good as it is. The same thing would hold true in the case of the parents of No. 1 and No. 3. This would lead us to the conclusion that the difference in these three ears is due to the difference in the producing power of their parents.

In our study of individual ears we saw the wide variation in the yield which different ears produced. We saw that while one ear yielded 90 bushels per acre, another ear beside it, which had exactly the same conditions, produced only 36 bushels. Some ears produced twelve times as many barren stalks as others and the same held true with the broken stalks. Now if we can select the ear which gives the large ear-producing stalks and leave out the one which produces the small ear and the one which produces the nubbins, we will have gone a long way toward materially increasing our yield; for it is evident that this wide variation is due to the difference in the producing power of these two ears. In this work of selection the ear may be taken as the unit. While there is something in the individuality of each kernel, we are sure of getting good corn and a large increase in the number of good ears to the hill if we study our seed ears carefully and plant only the best. Fourteen ears on an average will plant an acre, therefore, if we put in one ear that produces a great many nubbins and barren stalks we greatly reduce our yield on that acre.

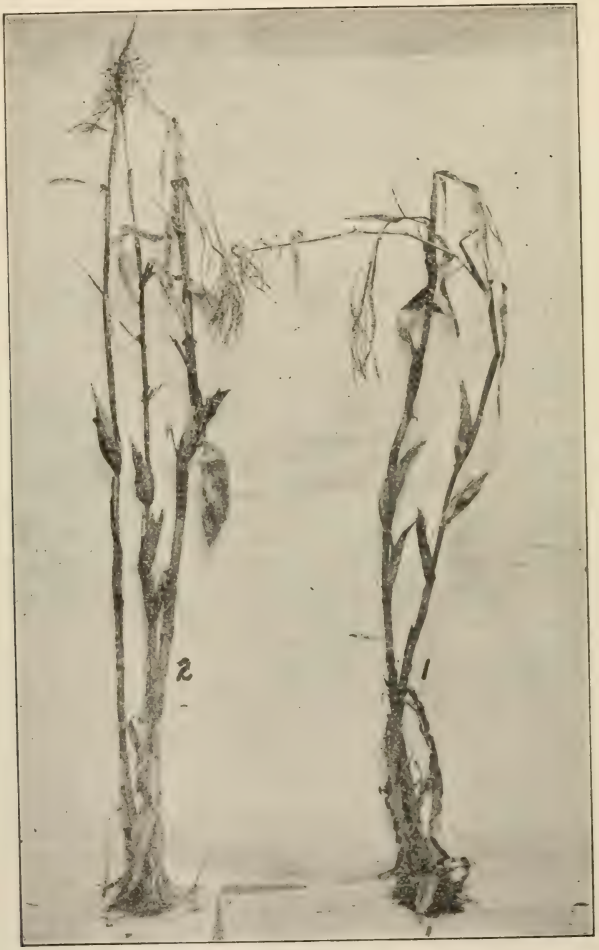


FIG. 15.

BARREN STALKS.

Out of the five stalks in these two hills only one produced a good ear. Note how weak and sickly the non-productive stalks are compared with the productive one. Barrenness is one of the greatest sources of loss in corn growing. To the farmer who grows corn for the grain alone these barren stalks are worse than a complete loss. They not only deprive the productive stalks of food, moisture and light but they produce polen which fertilizes the silks of the good stalks and so reduces the vigor and future producing power of many of the good ears. Nubbins are simply a mild form of barrenness.

This subject of barren stalks is very closely related to that of "The Product of a Single Hill." (See Fig. 14.)

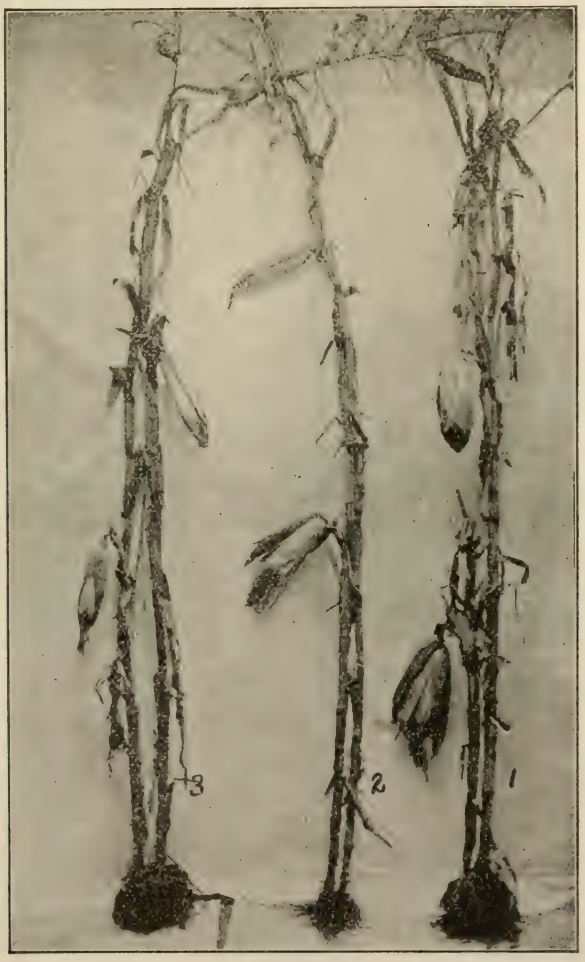


FIG. 16.

This cut gives an illustration of the class of stalks which produce the nubbins, or what is worse, nothing at all. The unproductive stalks in these two hills have hundreds of brothers scattered here and there throughout the field wherever the kernels from the ear that produced them were planted. Some of these brothers of course bore something, but a large per cent of the plants that came from that ear would be about like four of those in this cut—worse than nothing. On the other hand the stalks bearing the good ear would have hundreds of brothers throughout the field, which came from the same good ear it did, bearing—not nubbins or nothing at all as these are doing—but strong, vigorous stalks producing, in turn, a large percentage of good vigorous ears.

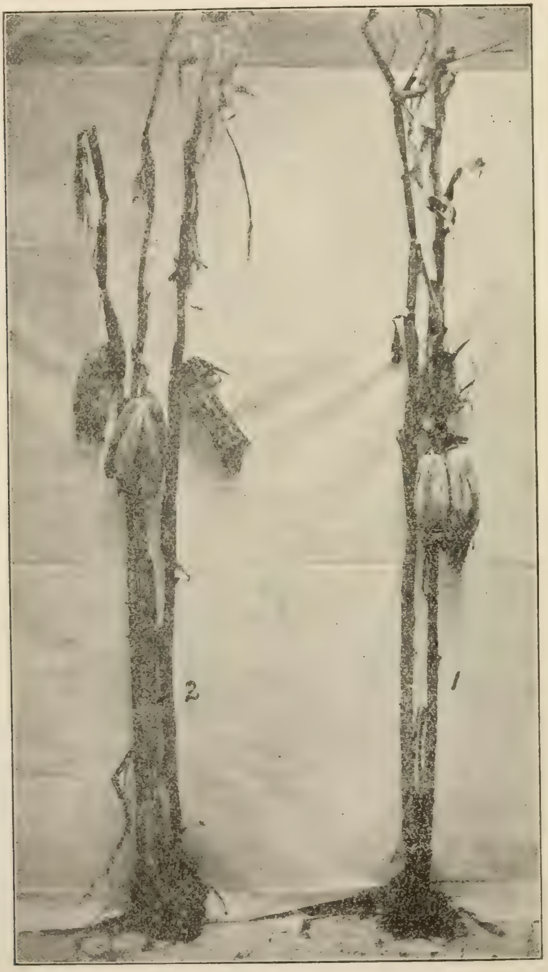


FIG. 17.

This question resolves itself into one of getting rid of these unprofitable ears and of planting only vigorous ear-producing ones. On an average one stalk in every seven produces nothing because of barrenness. One acre in every seven planted to corn is worse than wasted because of these unproductive stalks. Yet a little time and care in selecting our seed corn—not a dollar in outlay is required—will materially lessen this enormous loss. We can not pay too much attention to the careful selection of our seed corn.

### LACK OF UNIFORMITY IN HEIGHT OF EARS.

Fig. 16 illustrates lack of uniformity in height of ears in the same hill. In all cases these stalks were vigorous and produced ears of average size. It is an undesirable character, however, as it indicates a lack of breeding. As extremely high ears tend to be later than those lower down, they should not be used for seed purposes. Ears, on the other hand, that are too low tend to extreme earliness and as these two classes do not mature well together they should be avoided and none but ears borne at a uniform height should be used for seed.

### UNIFORMITY IN HEIGHT OF EARS.

Fig. 17 shows two hills of corn. No. 1 has two stalks each of which has produced a good ear. Both stalks are strong and vigorous and the ears are of uniform height. Hill 2, produced three stalks each of which bore an ear

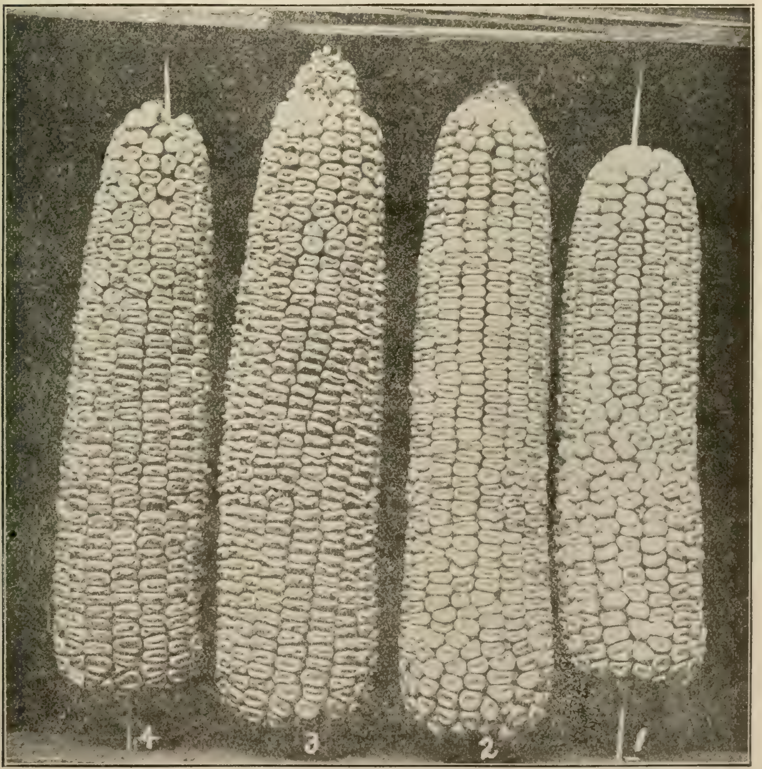


FIG. 18.

at a uniform and desirable height. This is an evidence of good breeding. Uniformity in height of ear is not so important as uniformity of kernels, but it is important in that it indicates good breeding and in ears of the same variety, a uniform time of ripening.

## SHOWING DIFFERENT TYPES OF CORN.

Fig. 18. In selecting seed corn it is important that all the ears be as nearly as possible of the same type. Ears Nos. 3 and 4 should not be planted with Nos. 1 and 2 as they are fifteen days later in maturing than the latter. In order to secure the best pollination it is important that all the stalks should shoot and the ears silk at about the same time. The very early and the very late stalks are usually barren, or partly so, owing to lack of pollen at these times. It is also very difficult to secure an even stand of differnt types, as kernels are almost certain to be of different sizes and shapes, making it impossible for a planter to drop them evenly.

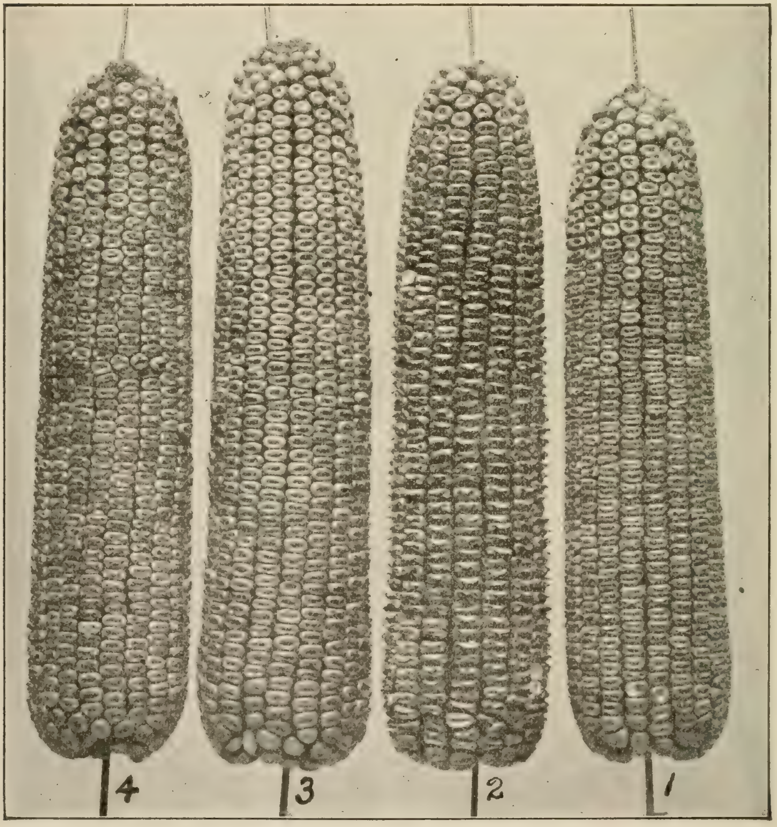


FIG. 19.

### GOOD SHAPE OF EARS.

Fig. 19 illustrates good forms of ears. All are well proportioned, have good butts and tips, the rows are straight and the kernels uniform. All the ears show strength, constitution and good breeding. Ears 1, 3 and 4 would plant well together. Ears 3 and 1 are slightly better in shape than ears 2 and 4.

When we realize the possibilities that are wrapped up in a single ear of corn and then make the careful selection the importance of the subject demands, we can, in a few years, greatly increase the value of the corn crop.

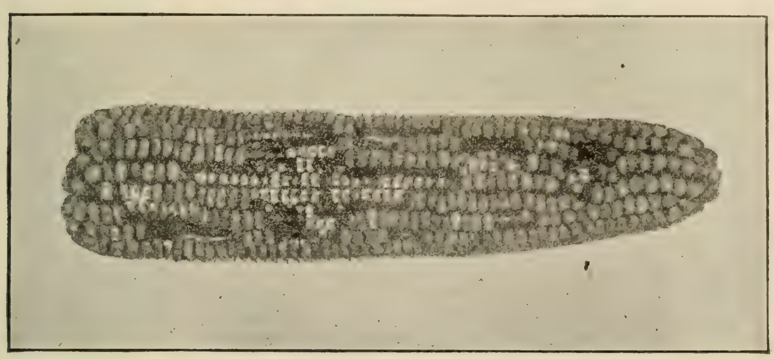


FIG 20.

EAR WITH BROKEN KERNELS.

Fig 20 illustrates a condition that exists more frequently than is generally supposed. Externally this ear appeared perfectly sound and in good condition. When some of the kernels were removed, however, the extent of the damage was apparent. Not infrequently splendid looking samples are put on exhibition and are no better in this respect than the ear shown in the cut. More frequently such ears, because of their good external appearance, are used for seed and as all the ears are shelled together the worse than worthless condition of the ear is seldom noticed.

The only outward evidence that this ear was not sound was shown in some rows of kernels being slightly raised above others. This peculiar condition is indicative of checked or broken kernels and is probably due to the silks remaining between the rows. When the silks decay the outer covering of the kernel which is in contact with them becomes affected a short distance above the tip. Moisture and heat then cause the kernel to decay and generally the vitality of the kernel is entirely destroyed. (See Fig. 21 for photograph of affected kernels.) The whitish spots shown in the illustration are the lower portions of the kernel below the break; the thin whitish lines near the tips of the outer rows of kernels illustrate how the silks affect the outer coat and make it easy for decay to set in.

The fact that such ears appear good from the outside and that they are frequently shelled with others and used for seed is one of the strongest arguments that can be advanced in support of shelling each seed ear separately. Not ten per cent of the kernels on this ear would grow and yet it appeared sound and in good seed condition. An examination of the kernels from each ear would lead to the rejection of all such and as time required to remove a few kernels from each ear is very little we can not afford, when we remember the possibilities that lie in a single ear of corn, to neglect to shell each ear by itself, disregard all badly damaged ears and pick out the occasional broken or injured kernels which are sometimes present in good ears.

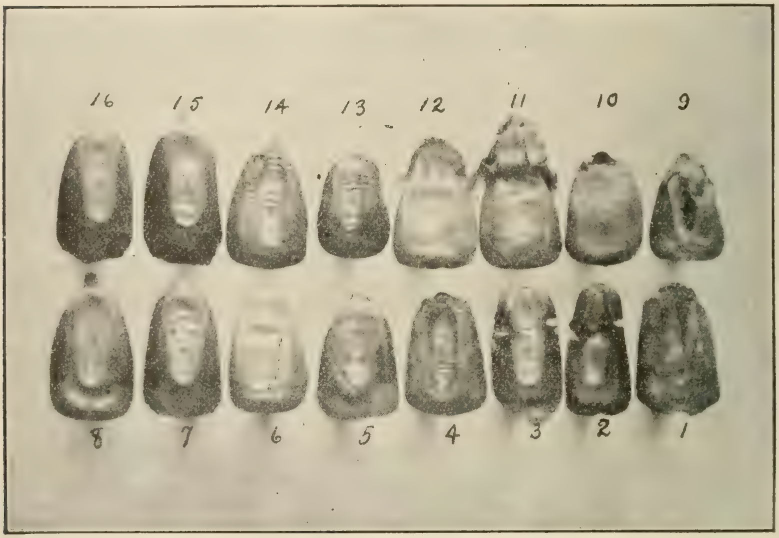


FIG. 21.

MATURITY OF KERNELS.

Kernels 1 and 9 germinated but after bursting the outer covering the young plantlet died. The ears from which these kernels were taken were stored in a warm place before they were thoroughly dried out, with the result that growth commenced. Nos. 2 and 3 have been injured probably by the decay of silks between the rows. (See Fig. 20.) Kernels injured in this way frequently break off in shelling. They should never be used for seed. Nos. 10, 11 and 12 are all good illustrations of immature kernels. Notice how the germs of all of them are either blistered or wrinkled. When No. 10 was shelled the tip adhered to the cob leaving the germ insufficiently protected. If this kernel was planted under favorable conditions it would grow, but if the planting is followed by cold, wet wether it will be far more likely to rot than a kernel that had not lost the tip cap. This is an indication of immaturity.

Nos. 11 and 12 show kernels which were so immature that, when shelled, large pieces of cob adhered. Nos. 13 and 14 show immature kernels which shrivelled when dried. Nos. 4, 5 and 6 are all immature but No. 4 has shrunken more than either of the others and presents a dull, dead appearance. Nos. 7 and 15 are very fair both as to shape and degree of maturity; 8 and 16 are excellent. No. 16 with its splendid form and bright, cheerful appearance is especially good.

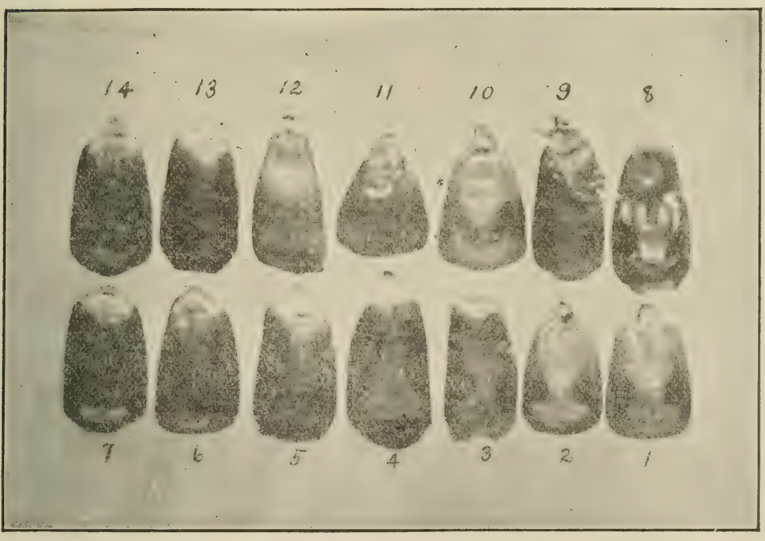


FIG. 22.

BACKS OF KERNELS.

Fig. 22 shows backs of kernels. Nos. 1, 2 and 10 show an unusually large proportion of the starchy part on the back and a very small percentage of hard, horny matter. This is an indication of immaturity. Such kernels always have a dull, dead color and are sure to be low in vitality as they are generally produced by late, weak stalks. Nos. 8 and 9 show kernels injured by contact with silks. (See Fig. 20.) When No. 9 was shelled the tip was nearly torn off. No. 3 illustrates the same thing only to a less extent. The crown of No. 3 is very thin and weak. No. 11 is a poorly shaped kernel and, in addition, is starchy and shrunken at the tip. Being thin as well as pointed, its vitality is very low. No. 4 is poor in that the crown is very thin and starchy; 5 and 12 are weak just above the tip as the depression shows. Nos. 7 and 14 are well developed, bright and strong; 6 and 13 are less perfect but are still bright and cheerful kernels. All four carry the horny part to the crown of the kernel.

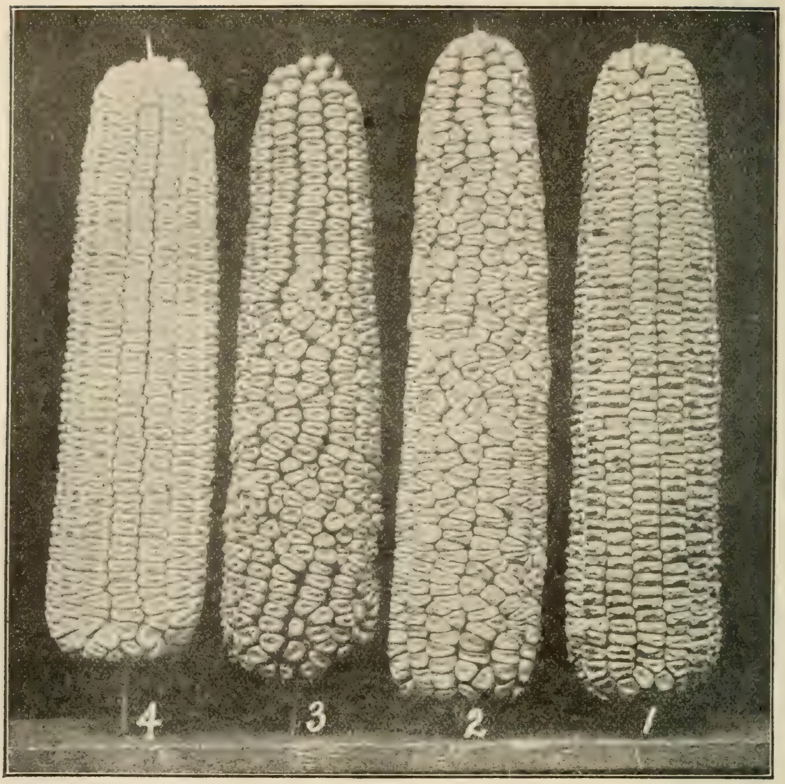


FIG. 23.

In selecting seed corn ears Nos. 2 and 3 should be discarded as no planter will drop a uniform number of these kernels per hill.

Ears Nos. 1 and 4 have kernels of uniform size and shape and when the butts and tips were shelled off the planter dropped three kernels to a hill 93 to 95 times out of every hundred tests while ear No. 2 tested 74-3's, 19-2's, 6-1's and 1-5.

### SPACE BETWEEN ROWS.

Fig. 24. Ear No. 3 has about the right amount of space between the rows to insure best results, while ears 1 and 4 illustrate the extremes. Ear No. 1 has too much space showing a deteriorated or ''run-out'' appearance, and shelling out a low per cent of corn to cob. On the other hand where there is too little space between the rows, as in the case of No. 4, the ear generally presents a dull, starchy or immature appearance. The kernels are too pointed or wedge-shaped, leaving a great deal of open space next to the cob, and are lacking in vitality. Ear No. 2 has a little too much space, while there is perhaps not quite enough on ear No. 5.

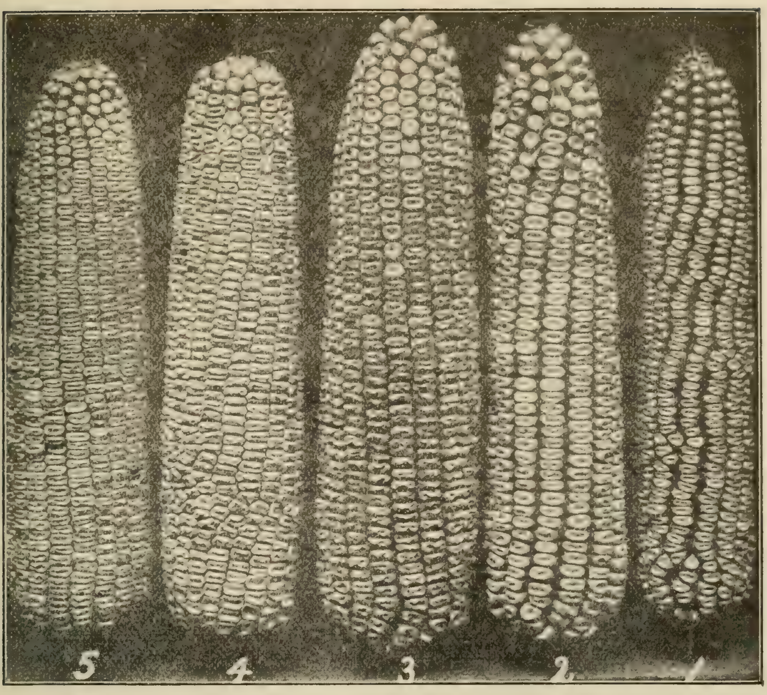


FIG. 24.

COMPOSITION OF KERNEL.

| Parts. | Per Cent Protein. | Per Cent Oil. | Total. |
|---|---|---|---|
| Crown | 13.51 | 1.00 | 14 51 |
| Middle | 9.98 | 3.33 | 13.31 |
| Tip | 12 26 | 12.02 | 24.28 |

Fig. 25 illustrates a corn kernel divided into three sections—crown, middle and tip. The two most valuable constituents of the kernel are protein and oil. Protein is a muscle former; oil is a fat producer. These constituents are not equally distributed through the kernel, but are formed in greater abundance in some parts than in others. This table shows that the tip portion is richer in protein than either the middle or the crown and that it contains a greater per cent of oil. The tip is also very rich in ash.

This makes it important that the kernels have a full, plump tip, not only that they may possess a high feeding value, but that when planted the seed may have a good supply of food which will enable it to produce a vigorous, healthy plant.

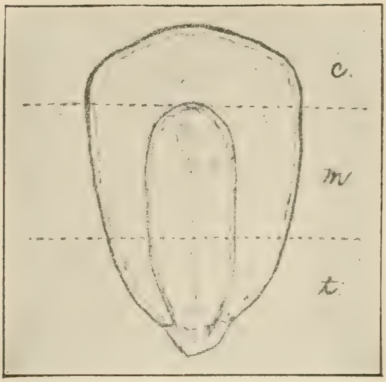


FIG. 25.

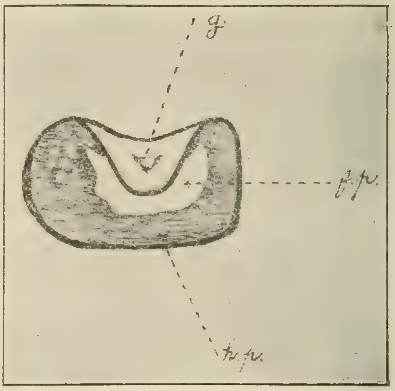


FIG. 26

Fig. 26 shows a cross section of a corn kernel.

(g) is the germ chit.

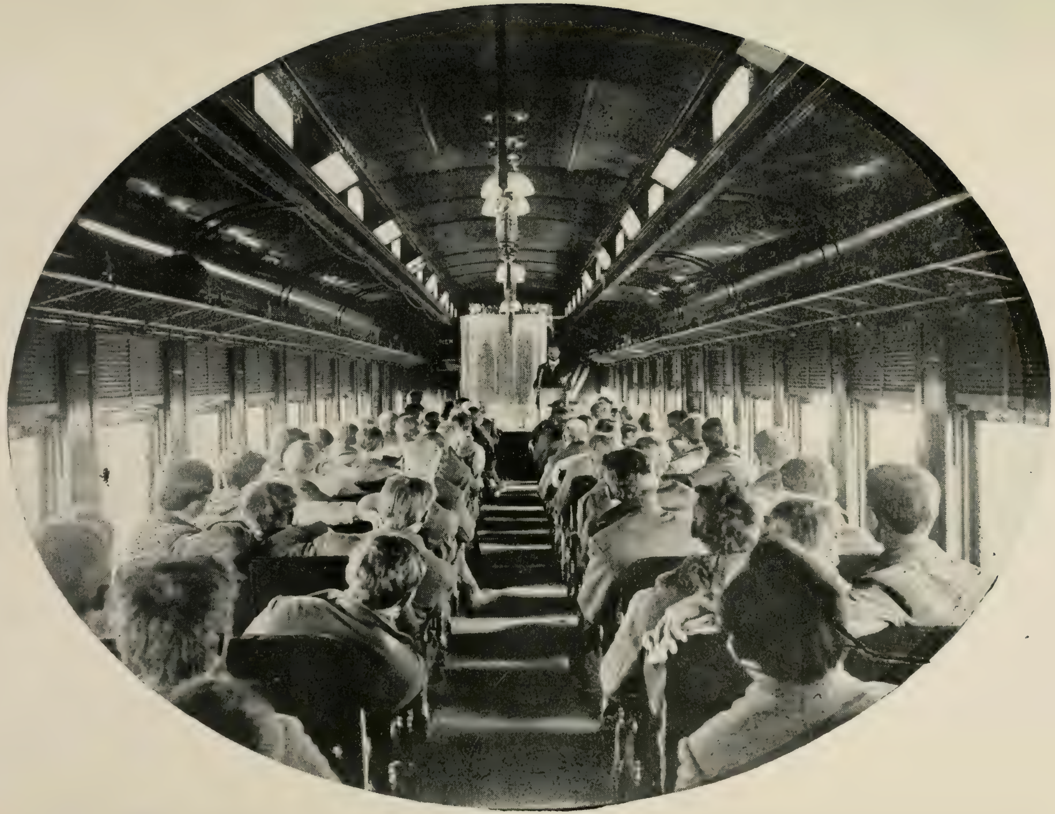
(f. p.) is the floury portion lying just under the germ.

(h. p.) represents the hard, horny portion of the kernel.

The following table shows the comparative feeding value of the different parts of the kernel:

| | Per Cent Protein. | Per Cent Oil. | Per Cent Ash. | Total. |
|---|---|---|---|---|
| Germ (g.)......................... | 19.28 | 34.6 | 10.11 | 63.99 |
| Floury portion (f. p.). .......... | 7.93 | .81 | .52 | 9.26 |
| Horny portion (h. p.)............ | 10.93 | 1.03 | .65 | 12.61 |

The above table shows: First, that the germ is the richest part in the three most valuable feeding constituents. Second, that the white, starchy portion has the lowest feeding value. From this we can see the importance of selecting ears having large deep germs and containing a small amount ot the floury portion.



Scene inside coach of Iowa Corn Special, Professor Holden explaining Germination Box.

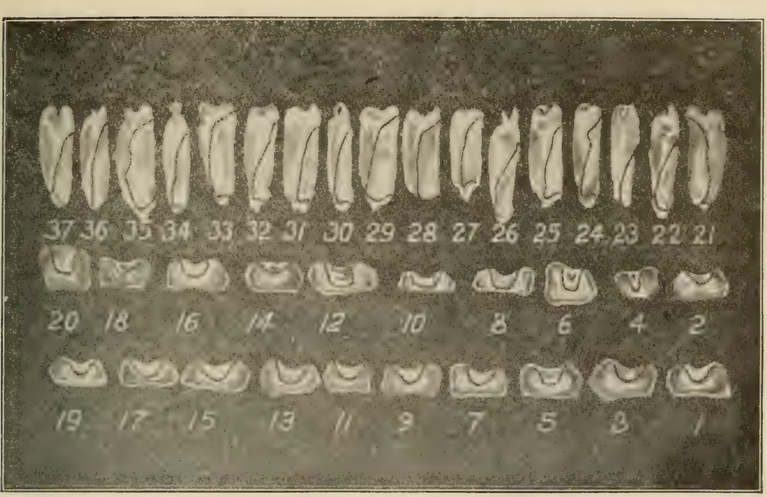


Fig. 27.

The upper row (Nos. 21 to 37) shows the depth of germ when the kernels are split in two lengthwise through the middle of the germ. Nos. 21, 24, 27, 28, 29, 33 and 35 show very deep germs and are from ears rich in protein and oil, No. 35 being from the ear richest in protein of 1,400 tests, while Nos. 22, 23, 36 and 37 are from ears very poor in feeding value. It will also be noticed that the germs are very small.

The lower two rows show cross sections of kernels. Nos. 2, 4, 14 and 18 are among the poorest, having very small germs and consequently very low in feeding value. Nos. 12, 16, 15 and 17 are among the very best.

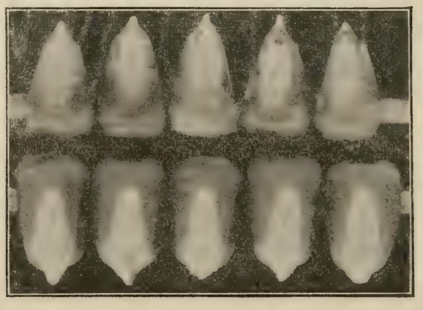


Fig. 28.

Fig. 28. The kernels in the top row in the above cut are taken from ear No. 2, shown on the following page, and those in the bottom row are taken from ear No. 1.

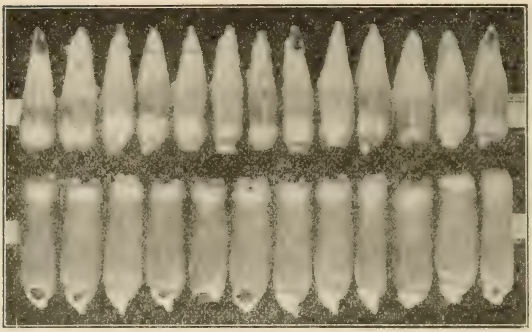


FIG. 29.

The lower row of kernels in the above cut are from ear No. 1, shown on the following page, and the kernels in the upper row are from ear No. 2. Judging from outward appearances of the ears, little or no difference in their values could be discovered. The ears from which these two rows were taken were almost exactly of the same size, yet ear No. 1 (see cut on following page) weighed 16 per cent more than ear No. 2, and shelled out 20½ per cent more corn than ear No. 2. Ear No. 2 is not only much poorer in feeding value than No. 1, but has a much lower vitality and would give a weaker plant.

It is very important that the tips of the kernels—the portion next to the cob—should be full and plump so that there is no space between the kernels down near the cob. In selecting our seed corn it is important that we should do more than look at the ears; we must study the kernels.

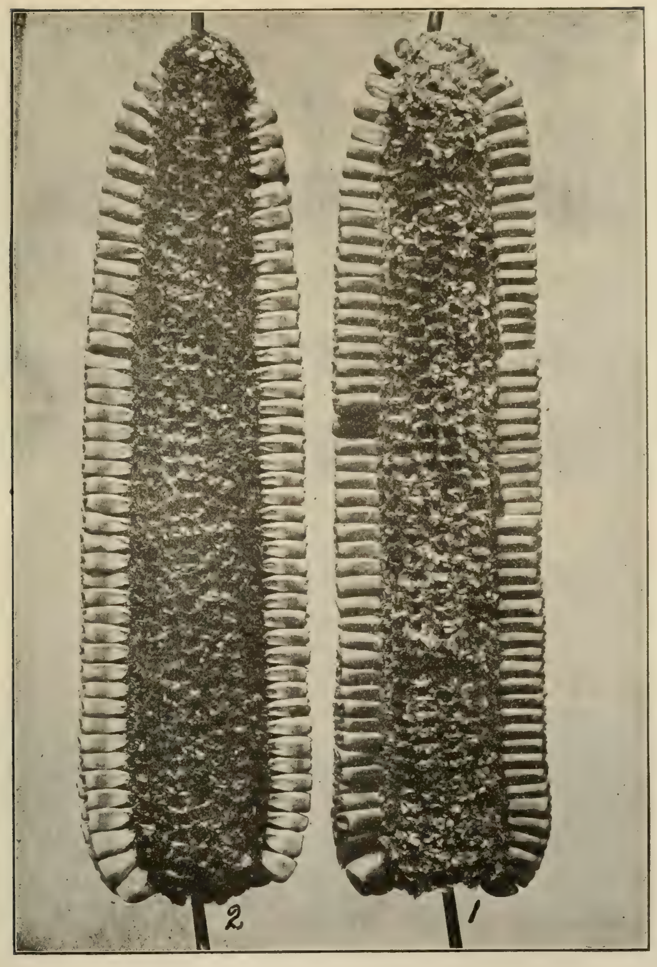


FIG. 30.

Fig. 30. Ear 2 shows space between the kernels next to the cob. Ear 1 is especially strong, showing good constitution. [See kernels from these two ears in Figs. 28 and 29 on preceding page.]

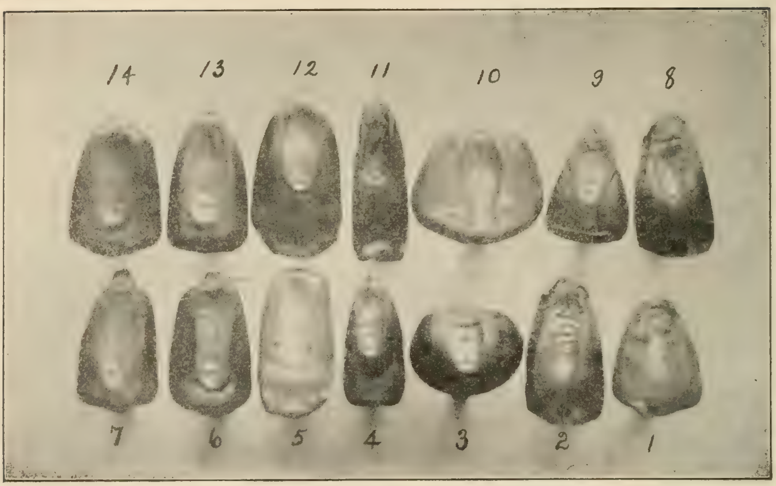


FIG. 31.

DIFFERENT TYPES OF KERNELS.

Fig. 31, Nos. 1, 2 and 3 are illustrations of kernels with poor, weak germs. Note how small and shrunken the germs are compared with Nos. 6 and 7. Nos. 8 and 9 are somewhat better, but the poor shape of their kernels, coupled with their small germs, make them very undesirable kernels. Pointed kernels such as these do not give room for good development of germ. In addition to being pointed these kernels are very thin at the tips, and so are weaker than they appear. Kernels of this shape frequently break off in shelling, especially if immature. No. 2 has a shrunken, blistered germ, owing to its immaturity, but is of a better form than 1, 8 or 9. Cobs bearing such kernels give a very low percentage of corn to cob as the wedge-like shape of the kernels does not allow them to fit closely. Nos. 3 and 10 are types of very broad, shallow kernels, such as are grown in the north where the season is short and where deep kernels could not mature. Kernels 5 and 12 have germs rather under the medium size, but are particularly weak at the crown. They do not carry their width up well like 13 and 14. They are thin at the crown, giving a chaffy appearance to the ear. Of the remaining four No. 14 is the best, followed by 6, 13 and 7 in the order named. No. 14 is a practically good kernel. It is of the broadly-wedged type, carries its width well down to the tip, has good depth and good width. It possesses a large, plump, cheerful germ, and the appearance of the whole kernel indicates strength and vitality.

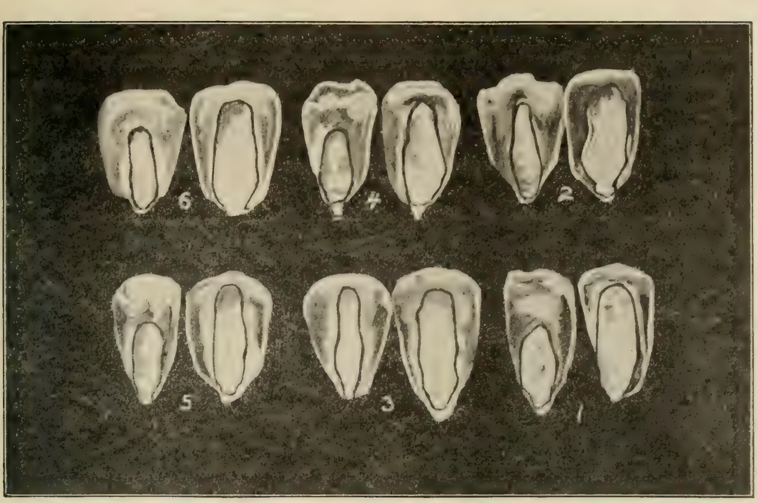


FIG. 32.

Fig. 32. Kernels showing large and small germs, taken from different ears of corn. The left hand kernels in all pairs come from ears with low feeding value and should be discarded for seed purposes, while the right hand kernels with large germs come from ears with a high per cent of oil and protein.

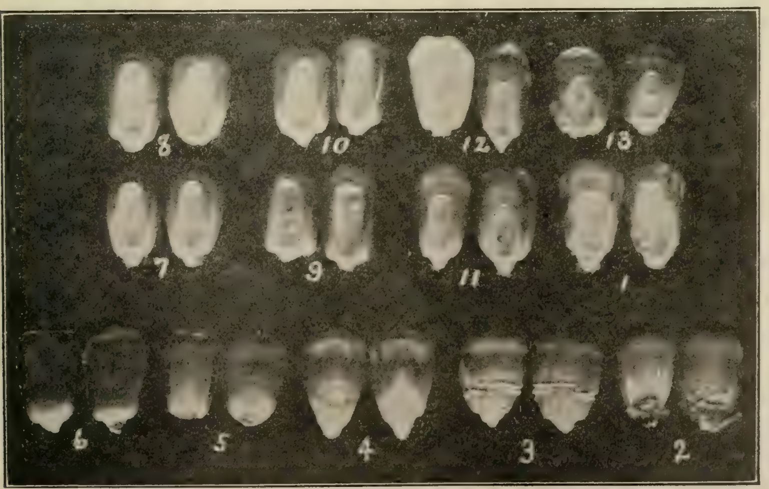


FIG. 33.

Fig. 33. No. 2 kernels with chaffy portion of cob adhering indicating lack of maturity.

No. 3 shows broken kernels. Ears with kernels of this kind should be discarded.

No. 5—Kernels with the tip portion protecting the germs broken off. While kernels of this kind frequently grow, yet it indicates lack of maturity.

Pairs of kernels Nos. 1, 7, 8, 9 and 10 show good, deep, well-filled germs, thus indicating strong vitality and good feeding value. Nos. 11, 12 and 13 show short germs, indicating weak vitality and low feeding value.

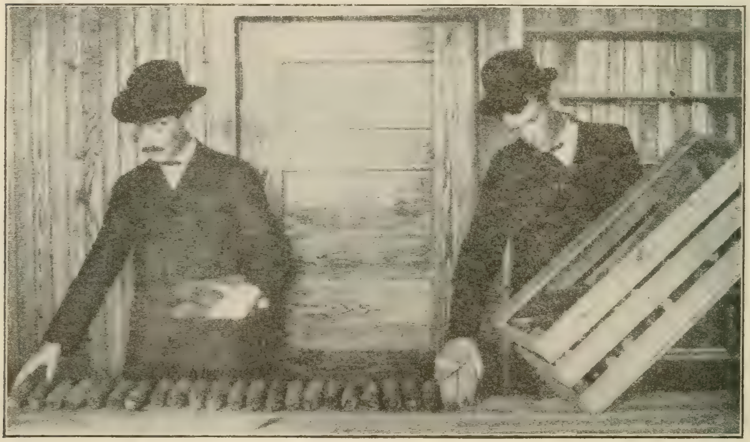


FIG. 34.

TAKING THE CORN FROM THE RACKS AND PLACING IT ON THE TABLES WHERE IT CAN BE STUDIED.

Fig. 34. The first step in the selection of corn is to get the ears out where they can be examined and compared. A long table or a couple of planks placed on barrels or boxes will answer this purpose very well. Arrange the ears with the butts even with the edge of the table.

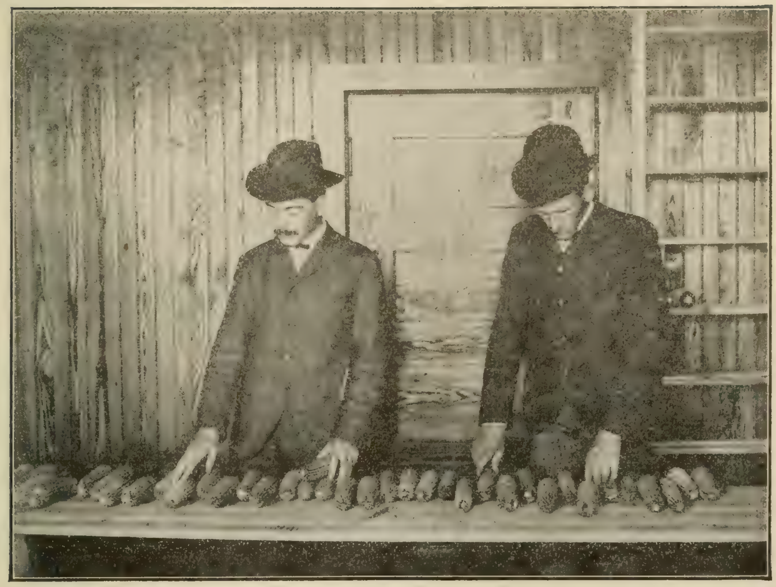


FIG 35.

SORTING OUT AND DISCARDING POOR EARS.

Fig. 35. Second Step. Having selected the ear which most nearly represents the type desired, go over the samples and discard all ears that do not conform to it in size, shape, color and uniformity of kernels.

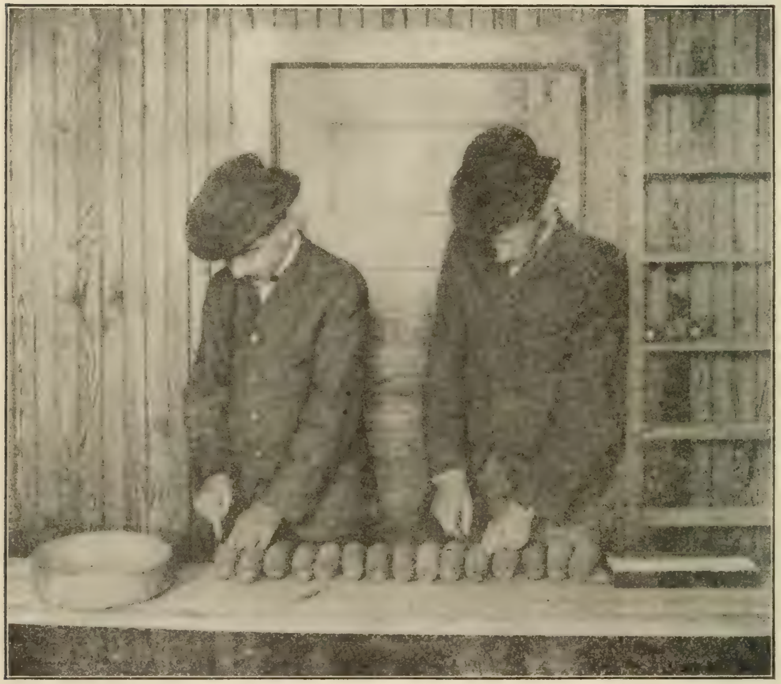


FIG. 36.

EXAMINING THE KERNELS.

Fig. 36. Third Step. From these selected ears remove two or three kernels and place them, germ side up, in front of the ear from which they were taken. Study the kernels carefully together with the ear as a whole, discarding those ears having faulty kernels.

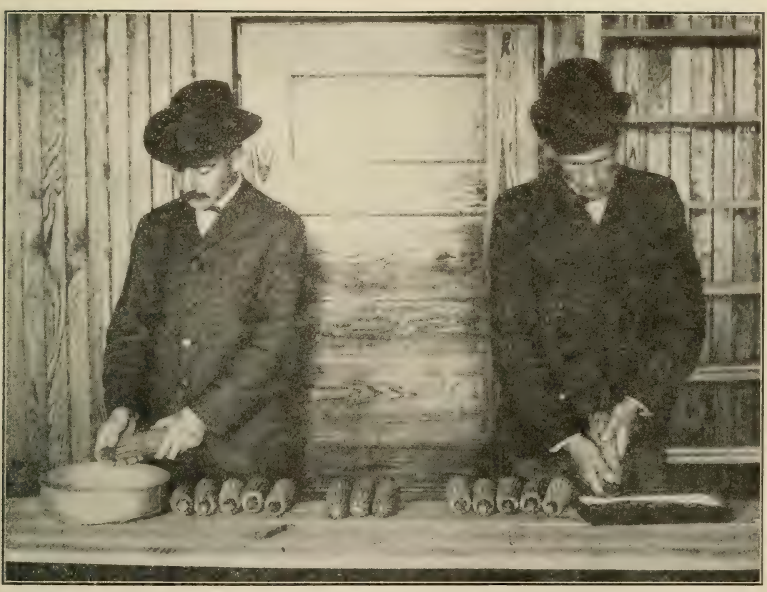


FIG. 37.

SHELLING OFF BUTTS AND TIPS.

Fig. 37. Fourth Step. Next shell off butts and tips. This is absolutely essential in order to secure a good stand of corn, which is so essential to a good yield.

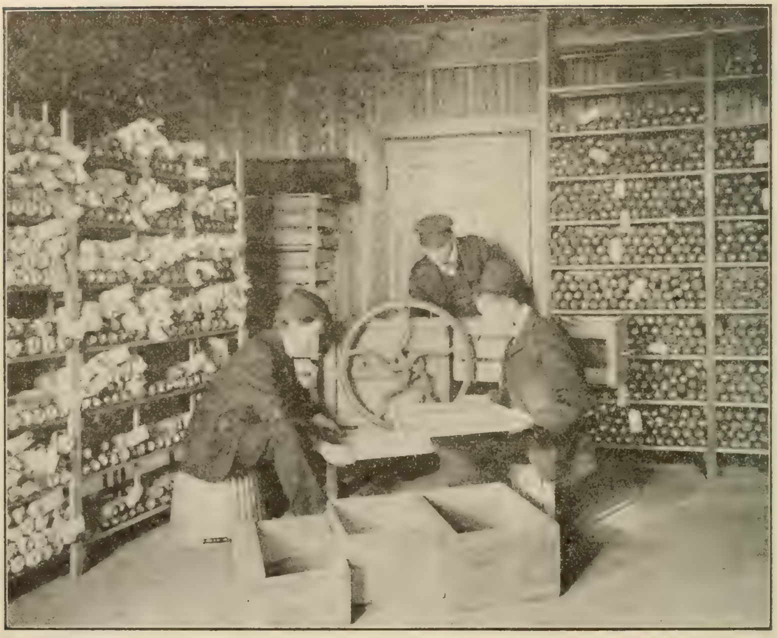


FIG. 38.

SHELLING THE EARS ONE AT A TIME.

Fig. 38. Fifth Step. Shell each ear separately. Too much importance can not be attached to this step. See Fig. 20. Shell each ear in a large shallow pan or on a screen, discarding those ears which show poor vitality or are defective in other ways. It is advisable to separate the corn into three grades according to the size and shape of the kernels—large, medium and small sized grains—and then the proper planter plates can be used for the different sizes.

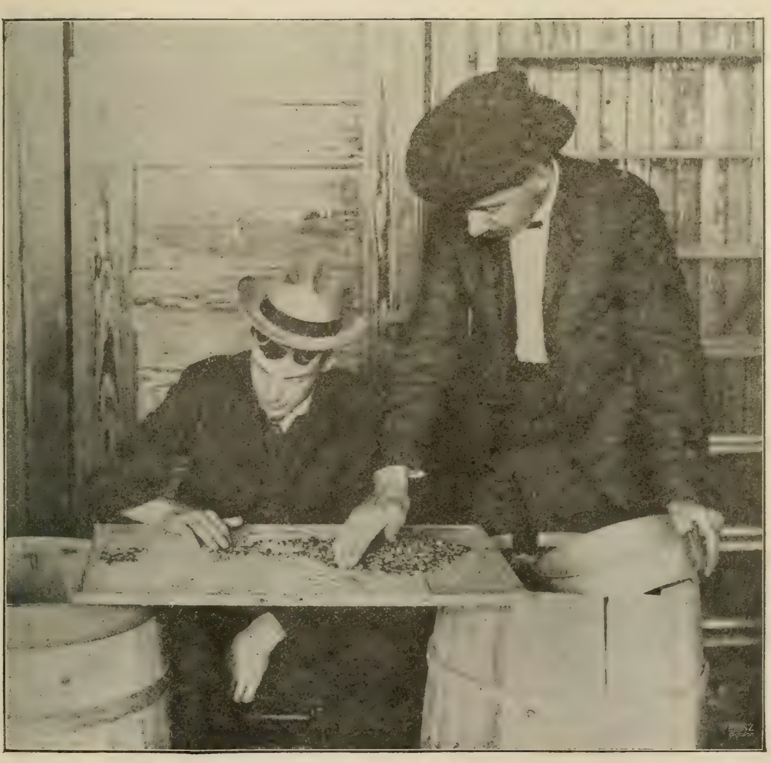


FIG. 39.

SORTING OUT THE POOR KERNELS, THOSE THAT ARE ROTTEN, BROKEN O DEFECTIVE.

Fig. 39. Sixth step. After picking out the damaged kernels, the corn is then ready for the planter test.

When the corn has been tested, graded for the planter and the inferior kernels removed it should then be placed in bags (gunny sacks preferred) half bushel in each and hung up in the attic by wires where there will be thorough circulation of air.

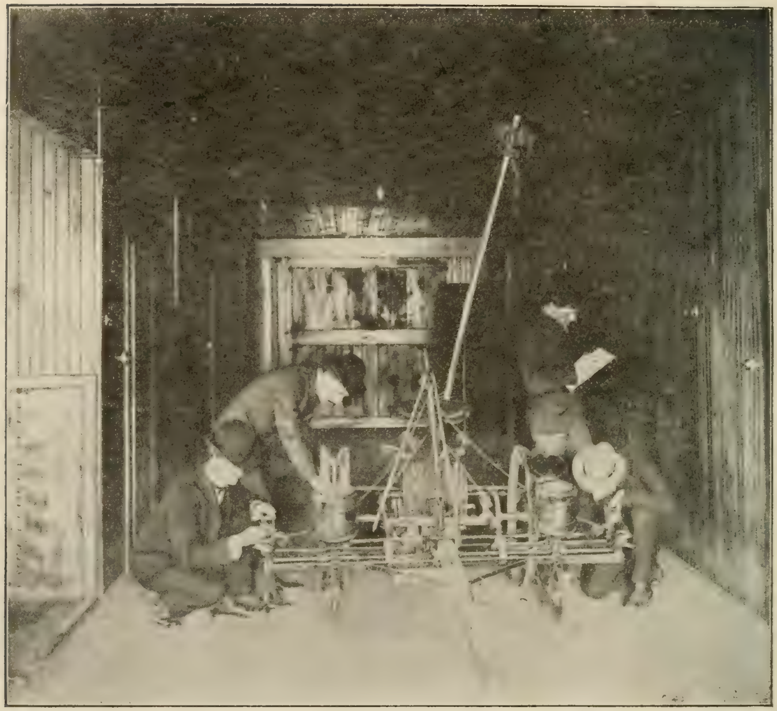


FIG. 40.

TESTING THE PLANTER.

Fig. 40. Seventh step. After the corn has been graded as just described, it is important to make a planter test in order to get the plates best adapted for the different samples. Do not neglect making this test. If the planter fails to drop the desired number of kernels to a hill ninety to ninety-five times out of every hundred, the plates should be ground or filed until they will drop the required number. The plate adjusted to each sample should then be put with that sample to avoid any confusion at planting time. Then place the seed in gunny sacks. Do not put over two-thirds of a bushel in a sack, and then hang it up in a dry, well ventilated place, as in the seed house or in the loft.

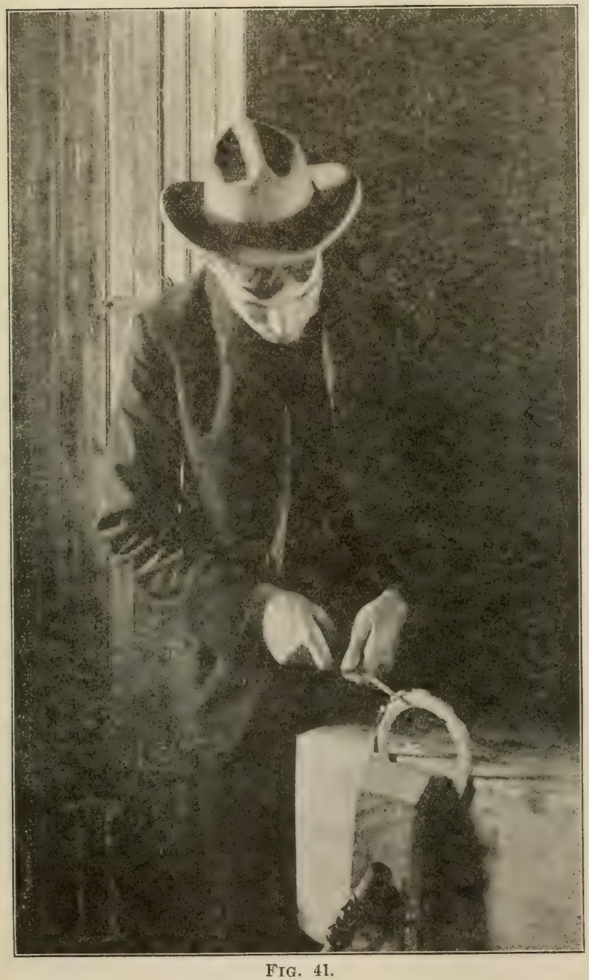


FIG. 41.

Fig. 41. Eighth step. Calibrating the planter plate so that it drops the required number of kernels per hill.

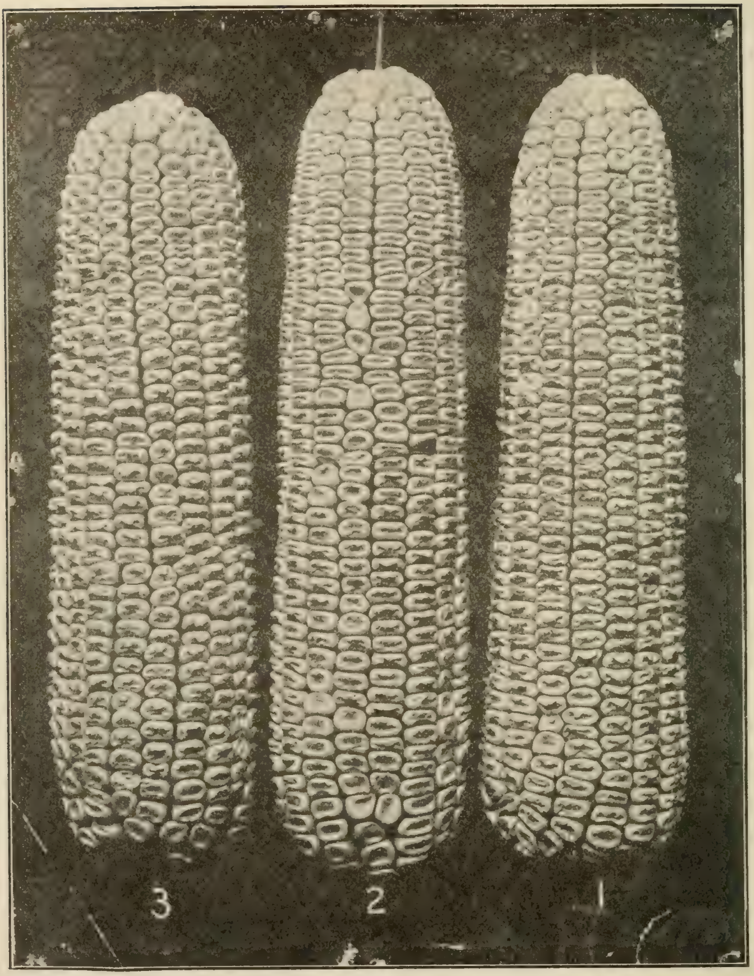


FIG. 42.

Ear No. 3 is too blocky, the tip is a little too full and the butt too much compressed, the kernels are also too thick or blocky. Ear No. 2 has a good form, the tip is excellent, the butt is slightly compressed and the kernels a little too blocky. No. 1 is an excellent ear of corn in every respect.

## CONCLUSIONS.

First: The vitality of germination power of each ear of corn intended for seed, should be carefully tested, and all ears refusing to grow or that show a weak germination should be discarded. This is especially important this year, as over 1,700 samples tested show that the germination of much of the corn is very poor.

Second: Carefully select 50 to 100 of the very choicest ears of your seed corn and plant them on one side of your earliest planted field, and if possible on fall plowed ground so that it will mature early next fall.

Third: Do not fail to grade the corn and test the planter thoroughly with the seed you intend to use and stay with it until it will drop regularly the number of kernels required in each hill.

Fourth: Do not import seed corn from a distance. Depend upon home grown for the main crop.

Fifth: it is very important that all corn intended for use should be harvested not later than October 20th and hung up in a dry and thoroughly ventilated place.

Sixth: Select ears of corn for seed which have kernels of as nearly uniform size and shape as possible, otherwise it will be impossible to secure an even stand with any planter.

Seventh: That it is unwise to store seed corn in barrels or boxes, as it will gather moisture, even though it appears to be thoroughly dry. This is especially true during the fall and winter months.

Eighth: That cold does not injure the vitality of corn when it is thoroughly dried and kept dry, but on the other hand, if allowed to gather moisture, freezing will reduce the vitality and may destroy it entirely.

Tenth: In case any seed corn is purchased from seedsmen, insist on having it shipped to you in the ear, either in crates or barrels.

Eleventh: All of this work, that is, the testing of the vitality, the sorting, the shelling and the testing of the planter, should be done before planting time. If put off until the hurry of the spring work is upon us, there is danger that it will not be done at all.

# STATE AGRICULTURE CONVENTION AT DES MOINES.

WEDNESDAY, DECEMBER 14, 1904.

In accordance with section 1657-d, chapter 2 of the 1902 Supplement to the Code of Iowa, which provides as follows: "There shall be held at the Capitol on the second Wednesday of December, 1900, and annually thereafter, a State Agricultural Convention, composed of the State Board of Agriculture, together with the president and secretary of each county or district society entitled to receive aid from the State, or a regularly elected delegate therefrom accredited in writing, who shall be a a resident in the county; and in counties where there are no agricultural societies the board of supervisors may appoint a delegate who shall be a resident of the county. The president or an accredited representative of the following named associations shall be entitled to membership in the said convention, to wit: The State Horticultural Society, The State Dairy Association, The Improved Stock Breeder's Association, The Swine Breeders Association, and each farmers' institute organized under the provisions of section sixteen hundred and seventy-five (1675) of the Code. Provided, said farmers' institute has been organized at least one (1) year, and has reported to the State Secretary of Agriculture, not later than November first, through its president and secretary or executive committee, that an institute has been held according to law, the date thereof, the name and post office address of its officers. They shall also furnish the State Secretary of Agriculture with a copy of program of each institute hereafter held and one or more papers read before the institute, if papers are read. No proxy given by any delegate elected by a farmers' instidute shall be recognized by said convention," the State Agricultural Convention convened in the rooms of the Department of Agriculture at 9:00 o'clock A. M., with its president,

W. W. Morrow, in the chair. The meeting was called to order by the president, and on motion of Mr. S. B. Packard the chair appointed the following named delegates as committees on credentials and resolutions:

*Committee on Credentials*—S. B. Packard, Marshall County; F. W. Wirick, Woodbury County; C. M. Clark, Henry County.

*Committee on Resolutions*—E. M. Wentworth, Marshall County; A. L. Ames, Tama County; H. M. Letts, Louisa County.

The convention listened to a paper on "Commercial Corn Grading," by Mr. Geo. C. Wells, Secretary of Iowa Grain Dealers' Association. This paper will be found in the Institute department of the Iowa Year Book of Agriculture for 1904, as will also the address of Hon. L. H. Kerrick of Bloomington, Illinois, on "Cattle Feeding."

Vice President Cameron was called to the chair, and President Morrow addressed the convention as follows; which was followed by the reports of the secretary and treasurer:

## PRESIDENT'S ADDRESS.

The Fiftieth Annual Iowa State Fair was the greatest and best exhibition in the history of the State.

At the first meeting of the State Board, held December 10th, of last year, the advisability of holding a fair the present year was discussed at length, on account of the Exposition being held at St. Louis. It was finally decided to hold a fair, and a committee was appointed to confer with the business men of Des Moines and endeavor to enlist their aid in making it a success. This committee met with the members of the Commercial Exchange, also with the bankers of the city; all of whom were enthusiastic in their pledges to assist in making the fair a success, and it was through their efforts that "Des Moines Day" was made the greatest in attendance in the history of the fair. As President of this Board, I desire to take this opportunity to publicly thank the citizens of Des Moines for their loyalty to the Iowa State Fair, and trust that "Des Moines Day" in the future may become one of its greatest features.

At our last annual meeting we had on hand twenty-nine thousand dollars, fifteen thousand dollars of which was set aside as a reserve fund, to be used in paying premiums in case of bad weather. Eleven thousand dollars has been expended for improvements, including painting of buildings, removing horse barns No's 10, 11 and 12, drainage, brick and cement walks, a woven wire fence on the west and part of the south side of the grounds, and many other improvements, a detailed statement of which will be found in the secretary's report.

Fifteen hundred dollars was used in remodeling the old horticultural building into a woman's building, which improvement we are pleased to say was highly appreciated by State Fair visitors.

The Thirtieth General Assembly very generously appropriated forty-seven thousand dollars ($47,000) for the erection of the new Agriculture, Horticulture and Dairy building. A building of this kind has long been needed on the grounds, and it was highly spoken of by all visitors at the fair. This building will stand for years to come as a monument to the wisdom of the Thirtieth General Assembly, to whom we owe our thanks.

We have on hand approximately twenty-nine thousand dollars ($29,000), out of which a reserve fund of fifteen thousand dollars ($15,000) should be kept. Further improvements should be made from time to time, as our financial condition ill permit. New hog barns should be built; brick and cinder walks extended, and a more thorough drainage system should be used. A new power house and pumping station is also needed. A part of these improvements can be made with the funds of the department now on hand and available; the balance should be provided for by the legislature, and an earnest effort made to give our people ample space in which to exhibit the products of the Iowa farm and factory, by providing permanent buildings of brick and steel construction, in harmony with the stock pavilion and agricultural hall.

Fakirs and immoral shows are a thing of the past with the Iowa State Fair, and it should be the aim of all future members of this board to conduct its affairs on such a high plane as will meet with the approval of our intelligent and law-abiding citizens.

## REPORT OF SECRETARY FOR THE YEAR 1904.

J. C. SIMPSON, DES MOINES, IOWA.

*Mr. President, Gentlemen of the Convention and Visiting Friends*—It is not my desire in submitting this, my annual report, to make it of undue length, thereby exhausting your patience, but will ask your forbearance for a short time, while I endeavor to outline as briefly as possible the affairs of the Department of Agriculture, under whose auspices the Iowa State Fair is held, since the closing of our fiscal year, November 30, 1903.

In referring to former reports of this department and the Iowa State Fair, it is noted that universally the statement has been made ''that the fair just closed has been the most successful in its history.'' While this is true of the past, I can see no reason for changing the statement at this time. The 1904 fair was a success; more so than any of its predecessors. This, from a financial standpoint, as well as the number and quality of its exhibits, which were somewhat lighter in the horse and machinery departments, but in all others were as good, if not better, than ever before.

Our receipts this year were about six thousand dollars more than last, and six thousand five hundred dollars more than the year before; while our net balance after paying all expenses and premiums was about the same. This, on account of additional expense for attractions and premiums. Our attractions alone costing five thousand dollars more than last year; one thousand six hundred dollars being for the night show, and three thousand four hundred dollars for Dan Patch. To this extra effort in providing star attractions we attribute the success of the fair. Following the two seasons of partial crop failures in Iowa, and coming in the year of the Exposition at St. Louis, we consider this an excellent showing.

The exposition did not keep as many away from the fair as we first anticipated, notwithstanding the fact that the railway fare from many points in the southern part of the State was less to St. Louis than to Des Moines. However, there were thousands of others who would have attended our fair had they not gone to St. Louis. We have no criticisms to make, nor excuses to offer, as to the attendance and financial outcome of the Iowa State Fair of 1904.

There was quite a little discussion in regard to the advisability of holding a fair in 1904, prior to the meeting of the board last December. Those who strongly opposed holding it in the year of the exposition at St. Louis advancing the argument that the result would be the same as that which followed the holding of the fair in 1893 during the Worlds Fair at Chicago. Those who favored the holding of a fair, would not concede that the failure of the fair of 1893 was wholly due to the holding of a World's Fair in that year, but was due in a great measure to the stringent conditions existing in financial affairs throughout the country at that time. They gave as their opinion, that a successful fair could be held, notwithstanding the exposition at St. Louis. Later developments have shown that they were right in this belief. The matter was argued pro and con quite strenously by the members of the board, but when the vote was taken and showed a majority in favor of the fair, the very best of feeling prevailed, and the individual members expressed themselves as ready and willing to do everything in their power to make the fair a success.

The people of Des Moines gave their support as never before. Business men were asked to close their places of business at least one half day, which request was readily granted, and they not only closed their places of business, but attended the fair and urged all their employes to do so. It has been a number of years since as many Des Moines people were in attendance at the fair at one time as were there on this half holiday. The business men and citizens of Des Moines are to be congratulated for the willingness shown and aid given to the Iowa State Fair of 1904. We sincerely hope that this same spirit will prevail in the future, for it will add much to its future prosperity.

To the press of the State we are also greatly indebted. To them must be given the credit for continually keeping the fair before the people through their columns. It was feared in the early part of the year, that on account of the greater exposition at St. Louis, the press might overlook the Iowa fair. But in this we were happily disappointed, which further demonstrates that Iowa people are always loyal to their institutions. The feeling which so long existed in some of the cities of the State against the Iowa State Fair, because of its location at Des Moines, has apparently died out, and the fair is now receiving the united support of all, which is due and generally accredited our State educational institutions.

Should the Iowa State Fair be made a two weeks fair? This question is often asked, and while many good arguments may be offered in favor of the proposition, for myself I am unable to see the necessity for doing so at this time. To analyze the proposition, we must first consider a few of the conditions necessary to the holding of a successful fair. First comes the selection of dates; they should be chosen for a time when there is the least work in progress upon the Iowa farms, and at a time of the year when the weather conditions are most likely to be favorable. Second, that our exhibits are not divided. This can only be avoided by selecting dates which do not conflict with those of states near by, for should Iowa and Minnesota hold fairs on the same dates it would certainly divide our exhibit, and make the fair less attractive and educational. To avoid this conflict in dates, there is an association formed among the leading fairs and expositions on the continent, which meets annually in Chicago. At these meetings dates are arranged as near as possible so that adjoining states do not have their fair during the same week. No western State fair belonging to this association is holding more than one week fair. It is admitted by all fair managers, that there is not to exceed three or possibly four weeks in the fair season that are at all desirable from which to select dates. If we were to hold a two weeks' fair, we would certainly conflict with dates of some of the surrounding states. This would lessen our exhibit, and have a tendency to lessen our attendance as well.

We are now holding nominally a five days' fair, with an aggregate attendance the past season of about one hundred and twenty-five thousand for five days, or an average daily attendance of twenty-five thousand. Two-thirds, if not more, of these visitors attend our fair on two days, Tuesday and Wednesday or Wednesday and Thursday, as the case may be, and this crowd is handled with but little inconvenience. With an enlarged grand stand that would seat from ten to fifteen thousand people, and the present transportation facilities for getting to and from the grounds, there would be no inconvenience, whatever, in taking care of a crowd of this size on any day of the fair. Now, it seems to me, what we want more than a two weeks' fair, would be to make an effort to increase this average daily attendance to fifty thousand.

I know some of you will say that it is useless to try to make a good day in attendance out of Monday and Friday of the fair; that it has been tried in the past and was a failure. You will remember the time, not many years ago, when it was said that clover could not be grown in northern Iowa. It had been tried repeatedly and was a failure; there was trouble in getting a good stand, and it would freeze out during the long cold winters. Nevertheless the farmers kept at it until they have demonstrated that as good clover, and as much of it, can be grown in northern Iowa as in the southern part of the State. So it is with the attendance at our State fair. We should make an effort to have five good days of attendance, in place of two or three, and keep at it until it is demonstrated that a good attendance can be had on each of the five days. To do this we must have the co-operation of the railroads, and so arrange the program that one day has as many attractions as the other, and that nothing will be missed by attending the fair on Monday or Friday. I believe this to be a better solution for increasing the attendance at our annual State fairs, than by holding it for two weeks, and it would certainly be less expensive and would bring out a better exhibit.

## IMPROVEMENTS MADE ON THE STATE FAIR GROUNDS IN 1904.

Many needed improvements and changes were made upon the fair grounds the past season, the most conspicuous being the erection of the agricultural, horticultural and dairy exhibit building, for which an appropriation of $47,000 was made by the Thirtieth General Assembly. The size of this building is 100 by 300 feet, with an added width of 33 feet between the two dome entrances on the front side. It has a floor space of approximately 32,000 square feet, being about one-fourth greater than the combined floor space of the three buildings formerly occupied by these departments. The cost of this building, together with the changes and other work necessary to prepare the site, has been $48,248.71. But very little work of a permanent nature was done on the interior of the building. Our plans and specifications did not call for any arrangement for the interior, for the reason it was deemed advisable to first use the building, when a better idea could be formed as to what was needed. However, the plans did call for a cement floor, which was not put in for two reasons; first of which was that the ground being filled it was thought best to let it settle sufficiently before putting down the floor, and second being the lack of time and funds available before the beginning of the fair. If the exhibits in these departments continue to increase in the future, as the display this year would indicate, it will not be long before provision will have to be made for a separate dairy building, leaving this building for the agricultural and horticultural displays.

By removing the horticultural department to the new building we were able to carry out our original plans for providing a woman's building upon the grounds. It has been the earnest desire of the board for some time that provision be made whereby a suitable building could be arranged as a resting place for the women and children attending the fair. This building is delightfully situated upon the side of the hill, overlooking the entire west part of the grounds. It is far enough removed from the main part of the grounds to be entirely free from dust and noise, and at the same time within easy walking distance. The funds available for this purpose would not permit of any extensive remodeling of the building this year, but enough was accomplished to make it an ideal resting place. A veranda was built along the entire west front, being 106 feet long by 16 feet wide. A floor was put down in the building, and a couple of rooms finished; one for the matron in charge, the other for an emergency hospital room. This hospital room was furnished with the regulation hospital cots and bedding. The report of Dr. Granville N. Ryan, whose assistant was in attendance at the building during the days of the fair, show thirty cases cared for in the hospital; two major cases temporarily cared for; ten accident cases, and seventeen calls made on different parts of the grounds; making a total of fifty-seven cases cared for during the week. Doctor Ryan further says in his report, that on two or three different occasions there were not cots enough, and a number of very sick women could not receive the proper attention on this account. He recommends for another year, that two wards be provided with at least eighty cots. By the Doctor's report it can readily be seen the hospital feature in connection with the building was highly appreciated. It should be understood that this building is not to be a meeting place for womens' clubs, but a *resting* place for women and children. The hospital room, of course, being open temporarily for all who may need medical assistance, and for this reason, at least one more room should be provided the coming year; thus giving a room for the ladies and one for the men. As fast as available more seats and rocking chairs should be provided for this building.

The matron in charge of the building was there day and night from beginning to close of the fair. She provided herself with a number of simple remedies, that she might be able to care for the less serious cases needing attention.

The poultry department was moved to the building formerly occupied by the agricultural display. This building makes an ideal one in which to exhibit poultry, it being large, roomy, well ventilated and lighted. I doubt if there is its equal on any State fair grounds.

The building formerly occupied by the dairy department was remodeled into a first class dining hall. Arrangements were made whereby about three hundred people could be seated at one time, and the meals and service was as good as will be found in many so-called first class hotels and restaurants. There is no question but that provision should be made for more dining halls of this class on the fair grounds, and the shutting out of some of the less desirable ones. After talking with representatives from many of the leading State fairs, and from my own observation, I am satisfied this is the best method to pursue in the future with the dining hall privileges upon the State fair grounds.

About eleven hundred dollars was spent the past year in improving the drainage system. The rain during the fair of 1903 taught us that some provision must be made to take care of the water from the roof of the stock pavilion. With the additional roof surface of the new agricultural building we were satisfied that should a heavy rain fall during the fair, that part of the grounds would be flooded, if provision was not made to care for this water. A large storm sewer was laid from the south line of the fair grounds along Rock Island avenue to the north past the stock pavilion, and to the north end of the agricultural building, with connections from the east side of these buildings. By doing this it was possible to connect all down spouts with the sewer. Several catch-basins were also put in at different points along the sewer at street intersections.

The open ditch running through the flat in the west part of the grounds was deepened and widened, the city cleaning it out below the grounds. This ditch has been the main drainage outlet for a vast territory to the northwest of the fair grounds, and has never been of sufficient size to carry off the water in a wet season. The city is now at work constructing a large open ditch about four blocks west of the grounds, and this, together with the ditch running through the grounds should prevent any trouble from overflows in the future. Additional storm sewers and drainage facilities should be provided as fast as the funds of the department will permit.

A heavy rainfall one night about four weeks previous to the opening day of the fair washed most of the top-dressing off the race track, leaving it in very bad shape. The entire surface of the track had to be resoiled, which was done at an expenditure of about $575. We have now one of the fastest and best half-mile tracks in the west.

A large number of minor improvements were made, such as placing cinders on the streets, painting, electrical work, offices for the superintendents of agriculture and horticulture, water supply, fencing, removing and rebuilding several horse barns, etc. All of these improvements, together with the repairs necessary to make buildings and grounds ready for the fair cost a considerable sum of money.

I believe that in the future the board should give more attention than they have in the past, toward beautifying the grounds. There is nothing that impresses a visitor more, than the neat appearance of the grounds. I am aware that it takes money to make all these improvements, but as it is available the streets should be curbed and guttered. This is made necessary from the fact that all the water from the hills on the east part of the grounds runs down through the streets on the flat part. At times this water comes in such volumes as to leave the streets in a wretched condition, it being impossible to keep them from washing so long as they are not curbed and guttered. If the streets have a neat, well-kept appearance, it will add much to the beauty of the grounds. Provision should also be made for keeping the paper picked up during the fair. This work could be simplified by having a rule forbidding the distribution of circulars and bills over the grounds. This rule has been adopted by the Minnesota State Fair Managers, and is rigidly enforced. It would in no way interfere with the exhibitor, or forbid him from handing out literature or circulars from his booth or place of exhibit. Again, I believe it would be a good idea to not allow melons to be sold on the grounds, other than from a regular dining hall or lunch stand, or from a building especially provided for that purpose. It is impossible to keep these melon rinds cleaned up, so long as it is permitted to peddle melons promiscuously over the grounds.

Much could be added to the appearance of the grounds by replacing the balance of the high tight board fence along the front, with a neat woven wire fence, such as as was put up this year between Grand Avenue and the street car entrance. This would also aid the guards in policing the fence. The entrances should be remodeled, which would add materially to the general effect.

I speak of these matters here to call the attention of the board to the minor details, which are often overlooked for the more important improvements which are made.

### COUNTY AND DISTRICT FAIR ASSOCIATIONS.

The reports from the county and district fair associations for the past year show, that they have been generally successful. Seventy-nine reports were received this year, as against seventy-one for the year 1903. Their financial statements show a small increase in the aggregate receipts and premiums paid; also in balances on hand at time of making report. They also show quite an increase in amounts expended for permanent improvements on their grounds during the past year. Taken as a whole the reports show a majority of the county and district fairs as being in a good live, healthy condition.

I believe more of the officers of these county and district fairs should attend the fair secretaries' meeting, which is held in this city annually during the week of the Farmers' Institute and Agricultural Convention. They would gather many good practical ideas, which would help them in their work. I know that the officers of the State Department of Agriculture are greatly benefited by their annual visit to the meeting of the Association of American Fairs and Expositions. It is there we gather many new ideas, or find the weak points in methods we have already in vogue.

### SHALL THERE BE A CENTRAL ORGANIZATION FOR COUNTY FARMERS' INSTITUTES.

There has been a good deal of discussion through the papers and at different meetings for the past few years, along the line whether a central organization for the farmers' institutes should be established. I think you will all agree with me, that there should at least be a meeting once a year, which would bring together the officers, and others interested in county institute work. The only question or argument has been, is to what power this organization should have over the local institute. I have never favored a plan which would take from the local institute their right to select their own dates and speakers. However, I believe a plan could be adopted which would bring about more unison in the institute work. I have in mind a plan of this kind: That a committee be appointed who, so far as the local institute is concerned, would have advisatory power only. They could meet once or twice a year, or as often as necessary. It would be their duty to block out the State in districts, and try and bring about an arrangement whereby the counties of a certain district would arrange their dates not to conflict. Provisions should also be made to get the names and addresses of institute workers, giving the subject of lecture they were prepared to talk upon. Then the committee could prepare a number of subjects which would aid the local officers or committee in making out their program. These subjects, the name and address of the workers and the dates of the institutes could be published in pamphlet form to be sent out upon request. This work could all be done through the office of the Department of Agriculture with the help of an extra clerk, which would have to be provided for by the legislature.

I believe some plan should be devised whereby the State Farmers' Institute, Improved Stock Breeders, Swine Breeders, Horticultural Society and meeting of the institute officers would be held in Des Moines during the same week. If this could be done the best speakers in the country could be secured at a much less expense than to bring them here for each of the several meetings.

Attached to, and made a part of this report, is a complete statement showing the financial condition of the department for the fiscal year ending December 1, 1904.

Following is a statement of moneys coming into my hands as secretary, and deposited with the treasurer, for which I hold receipts:

| | |
|---|---|
| From State appropriation for Agricultural building | $47,000.00 |
| From forage department | 1,365.75 |
| From speed entries | 4,127.50 |
| From suspension collected for American Trotting Association | 44.00 |
| From insurance loss | 38.10 |
| From exhibitors tickets | 1,706.00 |
| From scholarship contest | 26.00 |
| From annual State appropriation for insurance, improvements and repairs | 1,000.00 |
| From interest | 1,079.50 |
| Total | $56,386 85 |

## SECRETARY'S ACCOUNT OF GENERAL EXPENSE.

*For the Fiscal Year Ending November 30, 1904.*

| | | |
|---|---|---|
| Bill of 1903 (old), paid 1904 | | $ 250.24 |
| Express, telegraph and telephone | | 126.74 |
| Agricultural, horticultural and dairy building | | 48,248.71 |
| Other improvements for 1904: | | |
| Sewer and drainage | $ 1,078.90 | |
| Rebuilding horse barns | 1,718.60 | |
| Painting | 511.22 | |
| Sidewalks | 455.97 | |
| Track improvements | 578.83 | |
| Planting trees | 95.52 | |
| Womans' building | 1,500.00 | |
| Roofs on sheep barns | 254.04 | |
| Electrical work | 412.53 | |
| Poultry house | 174.62 | |
| Dining halls | 256.67 | |
| Fence—high woven wire | 369.72 | |
| Streets | 229.53 | |
| Office for superintendent of agriculture and horticulture | 200.00 | |
| Water supply | 275.00 | |
| Secretary's and treasurer's office | 48.11 | |
| Lumber—miscellaneous | 409.17 | |
| Hardware | 348.05 | |
| Glass | 88.51 | |
| Horse | 155.92 | |
| Brick | 30.20 | |
| Wagon | 42.00 | |
| Cement | 29.40 | |
| Cost of labor on miscellaneous improvements | 1,068.58 | |
| Miscellaneous improvements | 1,061.31— | 11,392.40 |
| Advertising | | 2,843.31 |
| Annual convention 1903 | | 579.13 |
| Printing and supplies for members | | 1,591.76 |
| Year book illustrations | | 12.20 |
| Committee on pure food | | 79.15 |
| Forage department | | 1,530.61 |
| Salary superintendent fair grounds | | 800.00 |
| Clerical services—secretary's office | | 511.80 |
| Miscellaneous expense | | 2,161.59 |
| Annual dues American Trotting Association | | 119.00 |
| Insurance | | 1,457.71 |
| Cattle department | | 462.22 |
| Electrical department | | 218.75 |
| Attractions | | 9,933.70 |
| Decorating | | 211.50 |
| Music | | 1,092.55 |
| Ticket department | | 242.80 |
| Privilege department | | 227.25 |
| Gate department | | 717.90 |
| Treasury department | | 623.80 |
| Police department | | 1,298.50 |
| Marshals | | 111.70 |
| Horse department | | 213.55 |
| Speed department | | 286.35 |
| Swine department | | 250.88 |
| Sheep and poultry department | | 307.60 |
| Machinery department | | 216.20 |
| Agricultural department | | 552.01 |
| Dairy department | | 264.35 |
| Horticultural department | | 261.90 |

| | |
|---|---|
| Art department | 563.85 |
| President's department | 84.20 |
| Womans' building | 24.50 |
| Scavenger work | 146.50 |
| Special premiums | 32.00 |
| Auditing committee meeting | 54.50 |
| Program soldiers' day | 79.35 |
| Annual convention 1904 | 17.00 |
| Total | $ 91,321.96 |

## SECRETARY'S ACCOUNT WITH G. D. ELLYSON, TREASURER,

*For the Fiscal Year Ending November 30, 1904.*

| RECEIPTS. | DR. | CR. |
|---|---|---|
| To cash on hand December 1, 1903 | | $ 28,963.11 |
| From W. C. Brown, superintendent horse department | | 231.00 |
| From S. S. Packard, superintendent cattle department | | 786.50 |
| From R. S. Johnston, superintendent swine department | | 1,123.60 |
| From H. L. Pike, superintendent sheep and poultry department | | 219.00 |
| From John Ledgerwood, superintendent machinery department | | 640.60 |
| From R. T. St. John, superintendent agricultural department | | 287.50 |
| From H. R. Wright, superintendent dairy department | | 434.70 |
| From W. J. Wragg, superintendent horticultural department | | 40.00 |
| From M. McDonald, superintendent art department | | 982.71 |
| From Jas. H. Deemer, superintendent of grounds | | 1,504.43 |
| From John Cownie, superintendent electrical department | | 111.55 |
| From Donald Hill, chief of police | | 17.60 |
| From J. W. Wadsworth, superintendent privileges | | 5,412.50 |
| From J. C. Simpson, secretary's department | | 56,386 85 |
| Ticket sales | | 48,543.65 |
| DISBURSEMENTS. | | |
| By expense warrants paid: | | |
| 1903 issue | $ 2.25 | |
| 1904 issue | 91,321.96 | |
| By premium warrants paid: | | |
| 1903 and former years | 57.58 | |
| 1904 issue | 24,645.57 | |
| Interest in premium warrants | .71 | |
| To cash on hand November 30, 1904 | 29,657.23 | |
| Total | $ 145,685.30 | $ 145,685.30 |
| Profit and Loss November 30, 1904: | | |
| By cash on hand | | $ 29,657 23 |
| To outstanding warrants | | 56.36 |
| To credit account November 30, 1904 | | $ 29,600.78 |

## STATEMENT OF RECEIPTS FOR FAIR OF 1904 AS COMPARED WITH THE PRECEDING YEAR.

| From Source Derived. | 1903 | 1904 | Increase. | Decrease. |
|---|---|---|---|---|
| Gate receipts | $ 36,010.36 | $ 36,366.00 | $ 355.64 | |
| Day amphitheater receipts | 2,577.10 | 6,538.15 | 3,961.05 | |
| Evening admissions | 511.25 | 799.50 | 288.25 | |
| Evening amphitheater receipts | 2,724.00 | 4,478.75 | 1,754.75 | |
| Quarter stretch tickets | 21.00 | 361.25 | 340.25 | |
| From all other sources not including $47,000 State appropriation for agricultural building | 22,135.64 | 21,178.54 | ........... | $ 957.10 |
| | $ 63,979.35 | $ 69,722.19 | $ 6,699.94 | $ 957.10 |
| | ........... | 63,979.35 | 957.10 | |
| Totals | ..... | $ 5,742 84 | $ 5,742.84 | |

## STATEMENT OF RECEIPTS AND DISBURSEMENTS CHARGED TO FAIR OF 1904.

| | | |
|---|---|---|
| Actual receipts received from fair of 1904 | | $ 66,138.26 |
| Actual expenses charged to 1904 fair | $ 28,735.66 | |
| Premiums awarded 1904 fair | 24,539.68— | 53,275.34 |
| Net profit from fair of 1904 | | $ 12,862.92 |

## STATEMENT OF PREMIUMS PAID AT FAIR OF 1904.

| | |
|---|---|
| Department A, Horses | $ 1,750.00 |
| Department B, Speed | 6,435.00 |
| Department C, Cattle | 5,797.00 |
| Department D, Swine | 1,619.67 |
| Department E, Sheep | 1,467.00 |
| Department F, Poultry | 732.50 |
| Department H, Agriculture | 1,798.94 |
| Department J, Pantry | 681.00 |
| Department K, Dairy | 693.57 |
| Department L, Fruits | 546.00 |
| Department M, Flowers | 613.00 |
| Department N, Fine Arts | 2,185.00 |
| SPECIALS: | |
| Scholarship Iowa State College | 200.00 |
| Photos | 15.00 |
| Total premiums paid at fair of 1904 | $24,539.68 |
| Premiums paid on mature corn, December meeting, 1903 | 152.00 |
| Total premiums paid November 30, 1903 to November 30, 1904 | $24,691.68 |

## MONEY EXPENDED FOR PERMANENT IMPROVEMENTS UPON THE IOWA STATE FAIR GROUNDS DURING THE PAST FIVE YEARS OUT OF RECEIPTS RECEIVED AT THE ANNUAL STATE FAIRS AND STATE APPROPRIATIONS RECEIVED FOR SPECIFIED BUILDINGS.

### EXPENDITURES FROM FAIR RECEIPTS.

| | | |
|---|---|---|
| 1900 | $ 8,115.59 | |
| 1901 | 13,378.73 | |
| 1902 | 26,457.12 | |
| 1903 | 17,855.77 | |
| 1904 | 12,641.11— | $ 78,448.32 |
| State appropriation for stock pavilion | 37,000.00 | |
| State appropriation for agricultural building | 47,000.00— | 84,000.00 |
| Total | | $ 162,448.32 |

PREMIUMS PAID AT EACH ANNUAL STATE FAIR FOR THE PAST FIVE YEARS.

| | |
|---|---|
| 1900 | $ 18,554.00 |
| 1901 | 18,567.00 |
| 1902 | 21,736.31 |
| 1903 | 23,813.00 |
| 1904 | 24,539.68 |
| Total | $ 107,209.99 |

## REPORT OF TREASURER FOR THE YEAR 1904.

*G. D. Ellyson, Des Moines, Iowa.*

Following is the report of your treasurer for the year 1904:

*Receipts.*

| | |
|---|---|
| Cash on hand December 1, 1903 | $ 28,963.11 |
| Gate receipts | 34,977.00 |
| Amphitheater receipts | 6,538.15 |
| Quarter stretch receipts | 361.25 |
| Evening receipts | 799.50 |
| Evening amphitheater receipts | 4,478.75 |
| Special tickets | 997.00 |
| Campers | 392.00 |
| Superintendent of privileges | 5,412.50 |
| Superintendent of horticulture | 40.00 |
| Superintendent of agriculture | 287.50 |
| Superintendent of swine | 1,123.60 |
| Superintendent of sheep and poultry | 219.00 |
| Superintendent of horses | 231.00 |
| Superintendent of machinery | 640.60 |
| Superintendent of electric light | 111.55 |
| Superintendent of speed | 1,354.50 |
| Superintendent of dairy | 434.70 |
| Superintendent of fine arts | 982.71 |
| Superintendent of grounds | 1,504.43 |
| Superintendent of cattle | 786.50 |
| Secretary | 5,952.85 |
| Chief of police | 17.60 |
| Interest | 1,079.50 |
| State appropriation | 48,000.00 |
| Total | $145,685.30 |

*Disbursements.*

| | |
|---|---|
| Expense warrants | $ 91,324.21 |
| Premium warrants | 24,703.86 |
| Balance | 29,657.23 |
| Total | $ 145,685.30 |

On motion of Mr. L. H. Pickard of Shelby county, the address of the president and reports of the secretary and treasurer was referred to a committee appointed by the chair, as follows: L. H. Pickard, Shelby county: T. W. Purcell, Franklin county, and J. F. Morris, of Sioux county.

On motion the convention adjourned to meet at 1:30 o'clock P. M.

### AFTERNOON SESSION.

The convention met at 1:30 P. M., pursuant to adjournment, with President Morrow in the chair.

Committee on credentials submitted the following report, and on motion of Capt. A. Head, of Jefferson county, the report was adopted and the delegates named therein entitled to a seat in the convention.

## REPORT OF COMMITTEE ON CREDENTIALS.

### DELEGATES TO AGRICULTURAL CONVENTION, 1904.

Adair County Agricultural Society—J. M. Wilson, Menlo.

Bremer County—E. M. Reeves, Waverly.

Buena Vista County Agricultural Society—C. E. Cameron, Alta.

Black Hawk County Agricultural Society, La Porte City District—B. L. Manwell, La Porte City.

Cass County—W. C. Williams, Atlantic.

Cerro Gordo County—W. C. Clark, Mason City.

Clayton County Agricultural Society—J. C. Flenniker, Strawberry Point.

Dallas County Agricultural Society—M. J. Wragg, Waukee.

Davis County Agricultural Society—T. D. Doke, Bloomfield.

Delaware County Agricultural Society—H. R. Wright.

Floyd County Agricultural Society—John W. Waller, Charles City.

Franklin County Agricultural Society—T. W. Purcell, Hampton.

Greene County—Albert Head, Jefferson.

Guthrie County Agricultural Society—Alex Grissell, Guthrie Center.

Hamilton County—Burt F. Keltz, Webster City.

Hancock County Agricultural Society—F. B. Rogers, Britt.

Hardin County Agricultural Society—H. S. Martin, Eldora.

Henry County Agricultural Society—C. M. Clark, Mt. Pleasant.

Howard County—A. J. Wells, Riceville.

Humboldt County Agricultural Society—L. C. Trauger, Livermore.

Iowa County—W. F. Hutton, Holstein.

Iowa County Agricultural Society, Williamsburg District—F. O. Harrington, Williamsburg.

Jackson County Agricultural Society—C. W. Phillips, Maquoketa.

Jasper County Agricultural Society—C. W. Campbell, Newton.

Jefferson County Agricultural Society—J. P. Manatrey, Fairfield.

Keokuk County Agricultural Society, What Cheer District—T. C. Legoe, What Cheer.

Kossuth County Agricultural Society—J. W. Wadsworth, Algona.

Lucas County—W. M. Householder, Chariton.

Louisa County Agricultural Society—R. S. Johnston, Columbus Junction.

Louisa County Agricultural Society, Columbus Junction District—R. S.

Johnston, Columbus Junction.

Mahaska County Agricultural Society—New Sharon District—W. C. Burrell, Oskaloosa.

Marion County Agricultural Society—Lake Prairie District—Chas. Porter, Pella.

Mitchell County—R. T. St. John, Riceville.

Monona County—Harold Pike, Whiting.

Muscatine County Agricultural Society—Union District—Ed. Fogg, West Liberty.

Madison County Agricultural Society—T. J. Hudson, Winterset.

O'Brien County Agricultural Society—R. C. Jordan, Sutherland.

Poweshiek County Agricultural Society—Central at Malcom—James Nowak, Malcom.

Scott County—Wesley Greene, Davenport.

Shelby County Agricultural Society—L. H. Pickard, Harlan.

Story County Agricultural Society—H. B. Chaddick, Nevada.

Sioux County Agricultural Society—J. F. Morris, Ireton.

Sioux County Agricultural Society—Rock Valley District—L. M. Black, Ireton.

Taylor County Agricultural Society—Geo. Van Houten, Lenox.

Union County—W. W. Morrow, Afton.

Washington County—D. J. Palmer, Washington.

Winnebago County Agricultural Society—J. A. Peters, Forest City.

Winnebago County Agricultural Society—Buffalo Center District—J. A. Peters, Forest City.

Winneshiek County Agricultural Society—Thos. Graham, Decorah.

Woodbury County—F. L. Wirick, Sioux City.

Wright County Agricultural Society—W. C. Brown, Clarion.

## FARMERS' INSTITUTES.

Benton County—Fred. McCulloch, Belle Plaine.

Black Hawk County—A. E. Glenny, Waterloo.

Calhoun County—Henry Parsons, Rockwell City.

Franklin County—T. W. Purcell, Hampton.

Grundy County—E. S. King, Grundy Center.

Hancock County—C. H. Nelson, Britt.

Ida County—S. M. Corrie, Ida Grove.

Jefferson County—J. P. Manatrey, Fairfield.

Keokuk County—Capt. E. Miller, Sigourney.

Madison County—H. A. Mueller, Winterset.

Mahaska County—A. Roe, Oskaloosa.

Monona County—R. W. Cassidy, Whiting.

Story County—C. W. Mills, Ames.

Union County—W. W. Morrow, Afton.

Winnebago County—Eugene Secor, Forest City.

Wright County—W. C. Brown, Clarion.

### SOCIETIES AND ASSOCIATIONS.

State Horticultural Society—P. F. Kinnie, Storm Lake.
State Dairy Association—S. B. Shilling, Mason City.
Improved Swine Breeders' Association—E. M. Wentworth, State Center.

### STATE BOARD OF AGRICULTURE.

#### EX OFFICIO.

Governor of State—Hon. A. B. Cummins, Des Moines.
President Iowa State College—Dr. A. B. Storms, Ames.
State Dairy Commissioner— H. R. Wright, Des Moines.
State Veterinarian—P. O. Koto, Forest City.

#### OFFICERS.

President—W. W. Morrow, Afton.
Vice-President—C. E. Cameron, Alta.
Secretary—John C. Simpson, Knoxville.
Treasurer—G. D. Ellyson, Des Moines.

#### DISTRICT MEMBERS.

First—R. S. Johnston, Columbus Junction.
Second—C. W. Phillips, Maquoketa.
Third—W. C. Brown, Clarion.
Fourth—R. T. St. John, Riceville.
Fifth—S. B. Packard, Marshalltown.
Sixth—T. C. Legoe, What Cheer.
Seventh—M. J. Wragg, Waukee.
Eighth—John Ledgerwood, Leon.
Ninth—M. McDonald, Bayard.
Tenth—J. W. Wadsworth, Algona.
Eleventh—H. L. Pike, Whiting.

S. B. PACKARD,
F. L. WIRICK,
C. M. CLARK,
Committee.

The committee on resolutions made the following report, and on motion same were adopted and the secretary instructed to send a copy to each of the Iowa members in Congress:

### REPORT OF COMMITTEE ON RESOLUTIONS.

Resolved, That we congratulate the officers of the Iowa State Department of Agriculture upon their very successful administration of every department of their work.

The fair of 1904 was not only notable for the quantity and quality of exhibits, but equally commendable because of the elimination of fakirs and other objectionable features.

We further desire to express our appreciation of the programme prepared for the State Institute meeting, and congratulate the gentlemen who so ably responded thereto. Our thanks are especially due to Messrs. Kerrick and Lovejoy, of our sister State, for their valued assistance.

Resolved, That we heartily endorse the position ot President Roosevelt with reference to the necessity of giving increased power to the Interstate Commerce Commission. The interest of the farmers and stock raisers of Iowa demand the early enactment of a law which will give the Commission power to not only declare a rate unreasonable and unjust, when it has been shown to be such after a full and open hearing, but to fix a rate which will be reasonable and just, said rate to become effective and remain in force unless set aside by the courts. We respectfully urge the Senators and Congressmen representing the State of Iowa to give the Quarles-Cooper bill their united and earnest support.

E. M. Wentworth,
A. L. Ames,
H. M. Letts,
Committee.

The committee on the address of the president and reports of the secretary and treasurer made the following report, and on motion same was adopted:

## REPORT OF COMMITTEE ON ADDRESS OF PRESIDENT AND REPORTS OF SECRETARY AND TREASURER.

Your committee, to whom was referred the president's address and reports of the secretary and treasurer, desire to report:

We feel gratified by the good showing made by the department during the past year, and the address and reports of its officers show, and they personally deserve a vote of thanks for the great success of the Iowa State Fair of 1904. Not only was the fair one of the best in the country, in the matter of exhibits and attractions and general knowledge gained, but in a financial way the department has made such progress as is very gratifying to the people of the State. In addition to the expenditure of large sums of money for improvements on the State Fair grounds during the past few years, the department has paid off a twenty-five or thirty thousand-dollar debt, and now have a surplus of approximately thirty thousand dollars in the treasury.

L. H. Pickard,
J. F. Morris,
T. W. Purcell,
Committee.

On motion of Mr. T. W. Purcell the convention proceeded to the election of the following officers of the State Board of Agriculture for terms of one year each, and for district members for terms of two years each:

President,
Vice-president.
Member from the Second district.
‘‘ ‘‘ ‘‘ Fourth ‘‘
‘‘ ‘‘ ‘‘ Sixth ‘‘
‘‘ ‘‘ ‘‘ Eighth ‘‘
‘‘ ‘‘ ‘‘ Tenth ‘‘

Mr. E. M. Wentworth, of Marshall county, placed in nomination for president of the State Board of Agriculture, Hon. W. W. Morrow, of Union county, to succeed himself, and moved that if there were no other nominations that the secretary be instructed to cast the unanimous vote of the convention for Mr. Morrow. Motion prevailed. The secretary so cast the vote and Mr. Morrow was declared duly elected as president of the State Board of Agriculture for the ensuing year.

Hon. C. F. Curtiss, of Story county, placed in nomination for the office of vice-president Mr. C. E. Cameron, of Buena Vista county, to succeed himself, and moved if there were no other nominations that the secretary be instructed to cast the unanimous vote of the convention for Mr. Cameron. Motion prevailed. The secretary so cast the vote and Mr. Cameron was declared duly elected as vice-president of the State Board of Agriculture for the ensuing year.

Mr. Ed Fogg, of Muscatine county, placed in nomination for member of the board from the Second district Mr. C. W. Phillips, of Jackson county, to succeed himself, and moved if there were no other nominations that the secretary be instructed to cast the unanimous vote of the convention for Mr. Phillips. Motion prevailed. The secretary so cast the vote and Mr. Phillips was declared duly elected as member of the State Board of Agriculture from the Second district for a term of two years.

Mr. M. McDonald, of Guthrie county, placed in nomination for member of the board from the Fourth district Mr. R. T. St. John, of Mitchell county, to succeed himself, and moved that if there were no other nominations that the secretary be instructed to cast the unanimous vote of the convention for Mr. St. John. Motion prevailed. The secretary so cast the vote and Mr. St. John was declared duly elected as member of the State Board of Agriculture from the Fourth district for a term of two years.

Mr. T. D. Doke, of Davis county, placed in nomination for member of the board from the Sixth district Mr. T. C. Legoe, of Keokuk county, to succeed himself, and moved that if there were no other nominations that the secretary be instructed to cast the unanimous vote of the convention for Mr. Legoe. Motion prevailed. The secretary so cast the vote and Mr. Legoe was declared duly elected as member of the State Board of Agriculture from the Sixth district for a term of two years.

Mr. T. J. Hudson, of Madison county, placed in nomination for member of the board from the Eighth district, Mr. John

Ledgerwood, of Decatur county, to succeed himself, and moved that if there were no other nominations that the secretary be instructed to cast the unanimous vote of the convention for Mr. Ledgerwood. Motion prevailed. The secretary so cast the vote and Mr. Ledgerwood was declared duly elected as member of the State Board of Agriculture from the Eighth district for a term of two years.

Mr. Eugene Secor, of Winnebago county, placed in nomination for member of the board from the Tenth district, Mr. O. A. Olson, of Winnebago county, to succeed Mr. J. W. Wadsworth, of Kossuth county, which motion was seconded by Mr. Wadsworth, and Mr. Secor moved that if there were no other nominations that the secretary be instructed to cast the unanimous vote of the convention for Mr. Olson. Motion prevailed. The secretary so cast the vote and Mr. Olson was declared duly elected as member of the State Board of Agriculture from the Tenth district for a term of two years.

Mr. T. W. Purcell moved that if there was no other business that the convention be adjourned. Motion prevailed and the president declared the convention adjourned.

J. C. SIMPSON, Secretary.

**A prize "Porker," Iowa State Fair, 1904.**

# MEETING OF THE STATE BOARD OF AGRICULTURE DECEMBER, 1904.

## Thursday Morning, December 15, 1904.

Meeting called to order at 9:00 o'clock A. M., and on roll call the following members were found to be present: Morrow, Cameron, Simpson, Johnston, Phillips, Brown, St. John, Packard, Legoe, Wragg, Ledgerwood, McDonald, Pike and Olson.

Mr. H. L. Bosquet, deputy clerk of the supreme court, was called in and administered the oath of office to the following newly elected officers and members of the board: W.W. Morrow as president, C. E. Cameron as vice-president, C. W. Phillips member from the Second district, R. T. St. John member from the Fourth district, T. C. Legoe member from the Sixth district, John Ledgerwood member from the Eighth district and O. A. Olson member from the Tenth district.

Mr. Johnston placed in nomination for secretary Mr. J. C. Simpson to succeed himself, which motion was seconded by Mr. Cameron and prevailing the president declared Mr. Simpson duly elected as secretary of the State Board of Agriculture for the ensuing year.

Mr. St. John placed in nomination for treasurer Mr. G. D. Ellyson to succeed himself and moved that the salary be fixed at $100 per year. Motion prevailed, and the president declared Mr. Ellyson duly elected as treasurer of the State Board of Agriculture for the ensuing year.

Mr. Packard moved that the reading of the minutes of the previous meeting be dispensed with. Motion prevailed.

Mr. Phillips moved that Mr. James H. Deemer be elected as superintendent of grounds for the ensuing year, to succeed himself, at a salary of $900 per year. Motion prevailed.

Mr. Phillips moved that Mr. Garth C. Fuller be elected as assistant secretary for the ensuing year, to succeed himself, at a salary of $75 per month. Motion prevailed.

Mr. Cameron moved that the dates for the Iowa State Fair of 1905 be fixed for August 25th to September 1st, inclusive. Motion prevailed.

The secretary presented petition from the exhibitors of corn at the State Institute meeting, requesting that they be permitted to retain corn placed on exhibit. On motion of Mr. Packard petition was granted.

Mr. Ledgerwood moved that the executive committee be instructed to make assignments of the superintendents for the fair of 1905 and report same to the board Friday morning. Motion prevailed.

On motion of Mr. Packard the board adjourned to meet at 2:00 o'clock P. M.

### AFTERNOON SESSION.

Board met at 2:00 P. M., pursuant to adjournment, with all members present.

A committee from the Iowa Swine Breeders' Association appeared before the board and asked that certain privileges be granted them, and that changes be made in the swine department of the premium list for the fair of 1905.

Mr. Packard moved that the chair appoint a committee of three, with himself as chairman, to meet with like committees from the Iowa Grain Dealers' Association and Iowa Corn Dealers' Association, to talk over the advisability of having a State grain and corn exhibition. The president appointed on the committee Messrs. Packard and St. John.

Mr. Johnston moved that the executive committee, together with the superintendent of privileges, be instructed to have a plat made of the space on the grounds used for privileges, and that they arrange a schedule of prices on same, and leave it in the office of the secretary until such time as the superintendent of privileges comes to Des Moines to stay permanently until after the fair. Motion prevailed.

Mr. Wragg moved that the letting of all privileges in buildings be delegated to the superintendent of privileges, with the understanding that no concession is to be sold in a building without the consent of the superintendent in charge. Motion prevailed.

Mr. Cameron moved that no circulars or bills be permitted to be distributed over the State Fair Grounds, this in no case to apply to literature handed out by exhibitors at their places of exhibit. Motion prevailed.

Mr. McDonald moved that the executive committee be instructed to have the Art Building moved from its present site, to a location to be decided upon by the committee. Motion prevailed.

Mr. Johnston moved that the board be adjourned until 9:00 o'clock Friday morning.

### FRIDAY MORNING, DECEMBER 16, 1904.

Board met at 9:00 o'clock A. M., pursuant to adjournment, with President Morrow in the chair, and upon roll call the following members were found to be present: Morrow, Cameron, Simpson, Ellyson, Johnston, Phillips, Brown, St. John, Legoe, Packard, Ledgerwood, Wragg, McDonald, Olson and Pike.

Minutes of Thursday's session of the board were read and approved.

Mr. Brown moved that Mr. Donald Hill of Storm Lake be selected as chief of police for the fair of 1905. Motion prevailed.

Mr. McDonald moved that Mr. T. D. Doke of Bloomfield be selected as chief marshal for the fair of 1905. Motion prevailed.

Mr. Legoe moved that Mr. T. J. Hudson of Winterset, Mr. C. M. Akes of Leon and Mr. J. R. Waller of Rockford be selected as assistant marshals for the fair of 1905. Motion prevailed.

The secretary presented papers and bills in regard to the two boys who were injured at the fair of 1904, and on motion of Mr. Packard the matter was referred to the executive committee, with power to act.

Mr. McDonald moved that fifteen thousand dollars ($15,000) of the money now in the hands of the treasurer be set aside as a reserve fund. Motion prevailed.

On motion of Mr. Cameron the following rule was adopted, same to apply to all classes in the live stock departments:

> "Where there is but one exhibit in a ring one premium only may be awarded; where two, two premiums only may be awarded; and where three or more, all premiums may be awarded."

Mr. Johnston moved that Class No. 2 as appearing in the premium list of 1904 be stricken out. Motion prevailed.

Mr. Brown moved that the arrangement of the speed programme for the fair of 1905 be delegated to the executive committee. Motion prevailed.

A committee appeared before the board and had a talk further in regard to holding a State grain and corn show, and asked that a committee of three be appointed to consider the matter with a like committee from the Grain Dealers' Association. The president appointed as this committee Messrs. R. T. St. John, S. B. Packard and himself.

The executive committee announced the assignment of superintendents of departments for the fair of 1905 as follows:

| | |
|---|---|
| Superintendent of tickets | C. W. Phillips, Maquoketa. |
| Superintendent of gates | O. A. Olson, Forest City. |
| Superintendent of privileges and concessions | W. C. Brown, Clarion. |
| Superintendent of horses | M. McDonald, Bayard. |
| Superintendent of speed | C. E. Cameron, Alta. |
| Superintendent of cattle | S. B. Packard, Marshalltown. |
| Superintendent of swine | R. S. Johnston, Columbus Junction. |
| Superintendent of sheep | H. L. Pike, Whiting. |
| Superintendent of poultry | H. L. Pike, Whiting. |
| Superintendent of implements and machinery | John Ledgerwood, Leon. |
| Superintendent of agricultural products | R. T. St. John, Riceville. |
| Superintendent of kitchen and pantry department | R. T. St. John, Riceville. |
| Superintendent of horticulture and floriculture | M. J. Wragg, Waukee. |
| Superintendent of dairy department | H. R. Wright, Des Moines. |
| Superintendent of exposition and art buildings | T. C. Legoe, What Cheer. |

Mr. Brown moved that the report of the executive committee on the assignment of superintendents be adopted. Motion prevailed.

On motion board adjourned to meet at 1:30 o'clock P. M.

### AFTERNOON SESSION.

Board met at 1:30 P. M., pursuant to adjournment, with members present as at morning session.

Minutes of the morning's session were read and approved.

Mr. Legoe moved that the matter of "assistant's tickets" for the fair of 1905 be delegated to the executive committee, with power to act. Motion prevailed.

The petition of the Iowa Swine Breeders' Association was before the board, and on motion of Mr. Johnston the following classification was adopted for the Poland-China, Duroc-Jersey, Berkshire and Chester White breeds for the fair of 1905:

### INDIVIDUALS.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Boar 2 years or over | $12 | $10 | $5 | $3 | $2 | H. C. | C. |
| Boar 18 months and under 2 years | 12 | 10 | 5 | 3 | 2 | H. C. | C. |
| Boar 1 year and under 18 months | 10 | 8 | 4 | 3 | 2 | H. C. | C. |
| Boar 6 months and under 1 year | 10 | 8 | 4 | 3 | 2 | H. C. | C. |
| Boar under 6 months | 8 | 6 | 4 | 3 | 2 | H. C. | C. |
| Sow 2 years or over | 12 | 10 | 5 | 3 | 2 | H. C. | C. |
| Sow 18 months and under 2 years | 12 | 10 | 5 | 3 | 2 | H. C. | C. |
| Sow 1 year and under 18 months | 10 | 8 | 4 | 3 | 2 | H. C. | C. |
| Sow 6 months and under 1 year | 10 | 8 | 4 | 3 | 2 | H. C. | C. |
| Sow under 6 months | 8 | 6 | 4 | 3 | 2 | H. C. | C. |

### HERDS.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Boar and 3 sows over 1 year | $12 | $10 | $5 | $3 | $2 | H. C. | C. |
| Boor and 3 sows over 1 year bred by exhibitor | 15 | 12 | 7 | 5 | 2 | H. C. | C. |
| Boar and 3 sows under 1 year | 12 | 10 | 5 | 3 | 2 | H. C. | C. |
| Boar and 3 sows under 1 year bred by exhibitor | 15 | 12 | 7 | 5 | 2 | H. C. | C. |

### GET OF SIRE.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Four swine, get of same boar, bred by exhibitor | $15 | $12 | $7 | $5 | $2 | H. C. | C. |

### PRODUCE OF SOW.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Four pigs under 6 months, produce of same sow, bred by exhibitor | $15 | $12 | $7 | $5 | $2 | H. C. | C. |

### SWEEPSTAKES.

| | |
|---|---|
| Boar any age | $ 12 |
| Sow any age | 12 |
| Boar any age, bred by exhibitor | 12 |
| Sow any age, bred by exhibitor | 12 |

Mr. Johnston moved that the class for Yorkshires be stricken from the list. Motion prevailed.

Mr. McDonald moved that the revision of the Dairy department for the fair of 1905 be delegated to the superintendent of the department and the secretary. Motion prevailed.

Mr. Packard moved that a class for Polled-Durham cattle be inserted, the classifications to be the same as in other cattle classes, and the following premiums be offered, aggregating $410. Motion prevailed:

| | | | |
|---|---|---|---|
| Individuals | $15 | $10 | $ 7 |
| Exhibitor's herd | 20 | 15 | 10 |
| Breeders' young herd | 20 | 15 | 10 |
| Get of sire | 10 | 7 | 5 |
| Produce of cow | 10 | 7 | 5 |
| *Sweepstakes:* | | | |
| Bull any age | 10 | | |
| Cow any age | 10 | | |

Mr. Packard moved that the "Iowa" classification be also made for Galloway cattle, premiums to be the same as paid in the Shorthorn, Hereford and Angus classes. Motion prevailed. (Motion reconsidered.)

Mr. Packard moved that in the Holstein and Jersey classes the premiums be made the same as in the premium list of 1903; viz: By the addtion of fourth and fifth premiums. Motion was lost. (Motion reconsidered.)

Mr. Packard moved that a "Milk Contest" be adopted for fair of 1905, and that the board offer $100 in premiums, the rules to govern same to be fixed by the superintendent of the cattle department and secretary. Motion prevailed.

Mr. McDonald moved that the recommendations presented by Hon. H. G. McMillan, in the horse department be adopted, in so far as they apply to classification, with the exception of "Get of sire," and that the amount of premiums be so arranged that the increase will not exceed $550. Motion prevailed

Mr. Johnston moved that the action of the board on the motion of Mr. Packard in regard to the revision of the premiums in the Holstein and Jersey classes be reconsidered. Motion prevailed.

Mr. Phillips moved to reconsider the action of the board on the motion of Mr. Packard as to adding an Iowa special class for Galloway cattle in the premium list. Motion prevailed.

Mr Ledgerwood moved that the motion of Mr. Packard, adding an Iowa class for Galloway cattle be laid on the table. Motion prevailed.

Motion of Mr. Packard for an addition of fourth and fifth premiums in the Holstein and Jersey classes was reconsidered, and motion prevailed.

Mr. Pike moved that the class for Delaine sheep be stricken out, and that they be put in the class with Merino's, as per premium list of 1903. Motion prevailed.

On motion of Mr. Pike the classes for Angora goats were stricken from the premium list.

Mr. Pike moved that Licester-Lincoln class be divided, making a class for each. Motion prevailed.

Mr. Pike moved that an Iowa classification be made for the Shropshires and Oxford Downs, premiums to be as follows: Motion prevailed.

| | | | |
|---|---|---|---|
| Ram 2 years old or over | $ 7 | $5 | $3 |
| Ram 1 year old or over | 7 | 5 | 3 |
| Ram lamb | 7 | 5 | 3 |
| Ewe 2 years old or over | 7 | 5 | 3 |
| Ewe 1 year old or over | 7 | 5 | 3 |
| Ewe lamb | 7 | 5 | 3 |
| Sweepstakes—Ram | 5 | | |
| Sweepstakes--Ewe | 5 | | |
| Get of sire—pen of four lambs | 10 | 5 | |
| Prize for flock--to consist of not less than 1 ram and 5 ewes | 20 | 10 | 5 |

On motion of Mr. Pike the class for "Middle Wool Flocks" was divided into two classes, the Oxford, Hampshire Downs and Dorsets, to be shown in one, and Shropshires and Southdowns in the other; premiums to be $20, $10, $5.

Mr. St. John moved that the revision of the rules governing the entries in county exhibits, so that one or more exhibits can be made from one county, be delegated to the superintendent of the department and the secretary. Motion prevailed.

Mr. St. John moved that $150 be added to the premiums in the agricultural department, same to be divided as follows: $50 for artistic display of grains and grasses; $50 for artistic corn display; and $50 for "county exhibits. Motion prevailed.

Mr. Wragg moved that $100 be added to the premiums in the horticultural department. Motion prevailed.

Mr. McDonald moved that the request of the Iowa Swine Breeders' Association for a plot of ground to be used as a "Model Hog Farm" be referred to the executive committee, with power to act. Motion prevailed.

Mr. Packard moved that the executive committee be instructed to provide a telephone system for the State Fair grounds. Motion prevailed.

Mr. Ledgerwood moved that the matter of providing attractions for the fair of 1905 be left in the hands of the executive committee. Motion prevailed.

Mr. Ledgerwood moved that the chair appoint a committee on per diem and mileage, which motion prevailed, and the chair appointed as said committee, Messrs. Ledgerwood, Pike and Olson.

Mr. St. John moved that the bill of Mr. Wragg for expense of gathering exhibits and other articles at the Exposition at St. Louis, amounting to $136.25, together with the bills of C. O. Garrett for $12 and L. G. Clute for $22.34 as assistants, be allowed, and the secretary instructed to issue warrants in payment thereof. Motion prevailed.

Mr. St. John moved that each member of the board appoint five policemen, and that the five each appointed by Messrs Wragg and Ellyson be mounted police. Motion prevailed.

Mr. Brown moved that Tuesday, August 29th of the fair of 1905 be designated as "Old Soldiers and Children's Day." Motion prevailed.

Mr. St. John moved that the compensation for all help and assistants at the fair of 1905 be the same as at the fair of 1904, viz:

| | | |
|---|---|---|
| Superintendents, not members of board | $ 4.75 | per day and actual railroad fare |
| Assistant superintendents | 3.75 | per day and actual railroad fare |
| Other help in departments not to exceed | 3.25 | per day |
| Two assistant treasurers | 5.75 | per day |
| Ticket sellers | 3.25 | per day |
| Police | 2.50 | per day |
| Mounted police | 3.00 | per day |
| Gate keepers | 2.50 | per day |
| Captains of gates | 3.25 | per day |
| Chief marshal | 50.00 | |
| Three assistant marshals | 30.00 | each |
| Chief of police | 5.00 | per day |
| Assistant chief of police | 3.25 | per day and actual railroad fare |

Motion prevailed.

Mr. McDonald moved that the matter of having "special city days" at the fair of 1905 be left in the hands of the executive committee. Motion prevailed.

Mr. Packard moved that the executive committee look into the practicability of getting certain articles and materials from the Exposition grounds at St. Louis for use on the Iowa State Fair grounds, and should anything be found that can be used to advantage tnat the same be purchased. Motion prevailed.

Mr. Packard moved that the executive committee be empowered to make such improvements on the Iowa State Fair grounds during the coming season as there are funds available and in their judgment are most needed. Motion prevailed.

Mr. St. John moved that each member of the State Board of Agriculture be allowed ten complimentary tickets for their personal use at the fair of 1905. Motion prevailed.

Mr. Packard moved that all unfinished business be delegated to the executive committee, with power to act. Motion prevailed.

Committee on per diem and mileage reported as follows:

| Name. | Days. | Rate. | Amount. | Miles. | Amount. | Total. |
|---|---|---|---|---|---|---|
| W. W. Morrow | 6 | $ 4.00 | $ 24.00 | 82 | $ 8.20 | $32.20 |
| C. E. Cameron | 6 | 4.00 | 24.00 | 140 | 14.00 | 38.00 |
| R. S. Johnston | 6 | 4.00 | 24.00 | 158 | 15.80 | 39.80 |
| C. W. Phillips | 6 | 4.00 | 24.00 | ... | ..... | 24.00 |
| W. C. Brown | 6 | 4.00 | 24.00 | 102 | 10.20 | 34.20 |
| R. T. St. John | 6 | 4.00 | 24 00 | 195 | 19.50 | 43 50 |
| S. B. Packard | 6 | 4.00 | 24.00 | 58 | 5.80 | 29.80 |
| T. C. Legoe | 6 | 4.00 | 24 00 | 100 | 10.00 | 34.00 |
| M. J. Wragg. | 6 | 4.00 | 24.00 | 16 | 1.60 | 25.60 |
| John Ledgerwood | 6 | 4.00 | 24.00 | 89 | 8.90 | 32 90 |
| M. McDonald. | 6 | 4.00 | 24.00 | 65 | 6.50 | 30.50 |
| J. W. Wadsworth | 3 | 4.00 | 12.00 | 123 | 12.30 | 24.30 |
| O. A. Olsen. | 3 | 4.00 | 12.00 | 155 | ..... | 12.00 |
| H. L. Pike | 6 | 4.00 | 24.00 | 200 | 20.00 | 44.00 |
| Total | | | | | | $444.80 |

John Ledgerwood,
H. L. Pike,
O. A. Olson,
Committee on Credentials.

On motion of Mr. Packard the board adjourned, to meet at call of president.

J. C. Simpson, Secretary.

# SYNOPSIS OF BOARD AND COMMITTEE MEETINGS, 1904.

## EXECUTIVE COMMITTEE MEETING.

### JANUARY 13, 1904.

Committee met at call of President Morrow, with all members present.

The president stated that the object of the meeting was to consider the instructions of the board relative to asking the Thirtieth General Assembly for an appropriation for certain improvements upon the State Fair grounds.

After discussing the question pro and con it was agreed to meet as previously arranged, on the 26th of January, for the purpose of receiving sketches of the proposed Agricultural, Horticultural and Dairy building, from the architects invited to prepare same.

The committee, by correspondence, instructed the secretary to send out the following letter to the several architects selected:

> The State Board of Agriculture contemplates erecting a building upon the State Fair Grounds at Des Moines, Iowa, during the year 1904, and respectfully invites you as architects, to make a sketch of the floor plan, front elevation and section of such building, which would be suitable and large enough to hold the exhibits in the agricultural, horticultural and dairy departments.
>
> The building is to be approximately 150x250 feet, or 35,000 to 37,000 square feet of floor space, to be divided as follows: For agriculture, 21,000 square feet; horticulture, 7,500 square feet, and dairy, 7,500 square feet.
>
> A good, substantial, plain building is desired; not too plain, but without costly decorations. The general appearance to be in its proportions rather than decorations.
>
> Material: Stone, brick, iron and wood. Scale: ⅛ inch to the foot. The main front will face northwest, and will be visible from all sides. The building will be erected on a sloping site, on which the southwest corner will be fully twelve feet below the northeast corner, and the northwest corner about eight feet below the northeast corner.

Light: The light to be admitted from the side walls, at a point above sixteen feet, and the balance if needed, through roof.

Floor: Aisles to be of cement, balance of paving brick.

As the committee must take into consideration the cost of the building in their selection of plans, architects are requesed in submitting their plans to also present estimate of the cost of the building, and a guarantee from a reputable contractor that the cost will not exceed the architect's estimate.

The State Board of Agriculture will pay $40 each for such sketches made by such architects as are invited to present them.

The sketches are to become the property of the board, with the understanding that should the necessary appropriation for the building be made at the present session of the legislature, that the architect of the sketch adopted by the committee shall be invited to make complete plans and specifications of same, at a price to be hereafter agreed upon, and the $40 due the successful architect for his sketch, as above provided, shall be considered as payment on account for the complete plans and specifications as prepared by him. The other sketches than those adopted will be framed and hung in the Exposition Building, and the business card of the architects may be displayed therewith. Sketches may be in pen and ink or in colors.

The executive committee of the State Board of Agriculture will meet in Des Moines, January 26, 1904, and all proposed sketches must be in the hands of the secretary by eleven o'clock on that date.

The above letter was written and sent to the following named architects on December 23, 1903:

Libbie, Nourse & Rasmussen, Des Moines.
Josselyn & Taylor, Cedar Rapids.
Hallett & Rawson, Des Moines.
Smith & Gage, Des Moines.
Reeves & Bailie, Peoria, Ill.
Proudfoot & Bird, Des Moines.
Cox & Schoentgen, Council Bluffs.

The secretary presented communication from Mr. J. H. Jackson of Centerville, Iowa, asking the return of one half of entry fee ($25) which had been collected in full ($50) by the American Trotting Association, and was now in the treasury of the department. After the secretary had stated the details leading up to the presentation of said claim it was moved by Mr. Cameron, and seconded by Mr. Simpson, that the secretary be instructed to issue warrant for $25 in favor of Mr. Jackson. All voted in the affirmative.

The secretary was instructed to purchase the necessary forage for the feed barn, for the fair of 1904.

On motion the secretary was instructed to issue warrants in payment of per diem and mileage as follows:

| | |
|---|---|
| To W. W. Morrow, 2 days and mileage | $16.20 |
| To C. E. Cameron, 3 days and mileage | 26.00 |

## EXECUTIVE COMMITTEE MEETING.

### JANUARY 26, 1904.

Executive committee met as per call of president, with all members present.

This being the day and date set for receiving architects' sketches for the proposed new agricultural, horticultural and dairy building, and the hour having arrived the committee proceeded to look over such sketches as were presented and were received from the following named architects:

Reeves & Bailie, Peoria, Ill.
Smith & Gage, Des Moines.
Libbie, Nourse & Rasmussen, Des Moines.
Proudfoot & Bird, Des Moines.

The day was fully taken up in going over and discussing with the different architects the plans presented, and at a late hour the committee on motion adjourned to meet at nine o'clock the next morning.

### WEDNESDAY, JANUARY 27, 1904.

Committee met pursuant to adjournment with all members present.

The entire day was consumed in discussing the plans submitted for the proposed new building, without coming to an agreement or making a selection, and further consideration was postponed until the next day.

### THURSDAY, JANUARY 28, 1904.

Committee met pursuant to adjournment, with all members present.

After further considering the sketches and plans presented by the different architects for the proposed new agricultural, horticultural and dairy building the one submitted by Messrs. Smith & Gage was unanimously selected by the committee.

On motion, which was properly carried, the secretary was authorized to issue warrants for $40, each, in favor of Messrs.

Reeves & Bailie, Messrs. Proudfoot & Bird and Messrs. Libbie, Nourse & Rasmussen, in payment of plans and sketches presented, as per agreement.

The secretary was instructed to ask for bids on the printing of the premium list.

The secretary was instructed to insert additional premiums in the swine department as follows: Boar 18 months old and under two years. Sow 18 months old and under two years: premiums to be the same as offered in other classifications in list and to apply to four classes of swine; viz, Poland-China, Berkshire, Chester-White and Duroc-Jersey.

The secretary was instructed to issue warrants in payment of pay rolls as presented by Mr. Deemer, superintendent of grounds, for labor performed on the fair grounds, when same is properly presented and O-K'd by Mr. Deemer.

The secretary was authorized to issue warrants in payment of postage or other office supplies, when the same were needed.

On motion, which was properly put and carried, the secretary was authorized to issue warrants in payment of per diem and mileage as follows:

| | |
|---|---|
| To W. W. Morrow, 3 days and mileage | $20.20. |
| To C. E. Cameron, 4 days and mileage | $30.00. |

The secretary was authorized to issue warrant for $18 in favor of the Des Moines Hosiery Mills; this as payment (contribution) toward the purchase of a lot in the east portion of the city, near the Iowa State Fair Grounds, upon which the city proposes to erect a fire station; the provision being that the citizens and property owners interested donate the lot.

## EXECUTIVE COMMITTEE MEETING.

### MARCH 30, 1904.

Committee met on call of president with all members present.

The meeting was called for the purpose of looking over and selecting advertising matter for the Iowa State Fair of 1904.

Advertising matter to the amount of $661 was purchased from the following named firms in amounts as follows:

| | |
|---|---|
| Brown & Bigelow, blotters and horse covers | $178.50 |
| Matt. Parrot & Son, hangers (1500) | 140.00 |
| Gray Lithographing Co., hangers (1500) | 97.50 |
| Sutherland Novelty Co., hangers and cards (3000) | 165.00 |
| Byers, Campbell & Pattie, novelties (500) | 80.00 |

The secretary was instructed to call a board meeting for Wednesday, April 6th. The bill making an appropriation for the proposed new building to be located upon the State Fair grounds having passed both branches of the legislature and become a law, this meeting of the board was necessary in order to select a location for said building, and to take such action as was necessary to authorize the executive committee to proceed with the work.

On motion the secretary was instructed to issue warrants in payment of per diem and mileage as follows:

| | |
|---|---|
| To W. W. Morrow, 4 days and mileage | $24.20 |
| To C. E. Cameron, 4 days and mileage | 30.00 |

On motion committee adjourned.

# MEETING OF THE STATE BOARD OF AGRICULTURE.

## WEDNESDAY, APRIL 6, 1904.

Board met on call of president and on roll call the following members were found to be present: Morrow, Cameron, Simpson, Johnston, Phillips, Brown, St. John, Packard, Wragg, Ledgerwood, McDonald, Wadsworth, Pike, Ellyson and Wright.

President stated that the purpose of the meeting was to decide upon a site for the location of the new agricultural, horticultural and dairy building, for which an appropriation of $47,000 was made by the Thirtieth General Assembly.

Minutes of December board meeting and executive committee meetings were read and, upon motion, approved.

A recess was taken until afternoon, for the purpose of visiting the grounds.

### AFTERNOON SESSION.

Board called to order at 1:30 o'clock P. M. by the president, with members present as at morning session.

It was moved by Mr. Phillips that the site for the location of the new building be the ground lying northeast from the stock pavilion, between Capital and Grand avenues, and east of Rock Island Avenue. Motion was seconded by Mr. St. John, and prevailed.

Mr. St. John moved that the executive committee and Mr. Wadsworth be instructed to have all buildings, except the offices of the president and superintendent of privileges, removed from the plot of ground above described. Motion was seconded and prevailed.

Mr. Phillips moved that the executive committee be instructed to notify all parties owning buildings on the ground selected for the location of the new building, that the same must be removed by the 25th of April, 1904. Motion was seconded by Mr. Ledgerwood and carried.

Mr. Brown moved that the remodeling of the present Dairy Hall into a dining hall be referred to the executive committee, with power to act. Motion was seconded and carried.

Mr. McDonald moved that the remodeling of the Horticultural Building into a womans' building be referred to the executive committee, with power to act. Motion prevailed.

Mr. Phillips moved that the superintendent of privileges be instructed to let no privileges in the booths under the grand stand that have to use fire in any form, and that no lights, except electric lights, be permitted for lighting said booths. Motion was seconded by Mr. Wragg and was carried by a unanimous vote.

Mr. St. John moved that no show of an objectionable character be permitted upon the Iowa State Fair Grounds during the State Fair, and that the president be instructed to enforce the above motion to the letter. Motion was seconded by Mr. Ledgerwood and prevailed.

Mr. Packard offered the following resolution and moved its adoption, which was seconded by Mr. Johnston and prevailed:

> Resolved, That the executive committee are hereby authorized and iustructed to advertise for bids for the erection of the new building for the use of the agricultural, horticultural and dairy exhibits upon the State Fair grounds; and it is further
>
> Resolved, That the executive committee be authorized to award contracts to the lowest responsible bidders.

The president appointed a committee on per diem and mileage, which reported as follows, and on motion same was adopted, and the secretary instructed to issue warrants in payment thereof:

| Name. | Days. | Rate. | Amount. | Miles. | Amount. | Total. |
|---|---|---|---|---|---|---|
| W. W. Morrow | 4 | $ 4.00 | $16.00 | 82 | $ 8.20 | $ 24.20 |
| C. E. Cameron | 4 | 4.00 | 16.00 | 140 | 14.00 | 30.00 |
| R. S. Johnston | 3 | 4.00 | 12.00 | 158 | 15.80 | 27.80 |
| W. C. Brown. | 3 | 4 00 | 12.00 | 102 | 10.20 | 22.20 |
| S. B. Packard | 3 | 4.00 | 12.00 | 54 | 5.40 | 17.40 |
| H. L. Pike | 3 | 4.00 | 12.00 | 200 | 20.00 | 32.00 |
| John Ledgerwood. | 3 | 4.00 | 12.00 | 89 | 8.90 | 20.90 |
| R. T. St. John | 3 | 4.00 | 12.00 | 195 | 19.50 | 31.50 |
| M. McDonald | 3 | 4 00 | 12.00 | 65 | 6.50 | 18.50 |
| M. J. Wragg | 3 | 4 00 | 12.00 | 16 | 1.60 | 13.60 |
| J. W. Wadsworth | 4 | 4.00 | 16.00 | 123 | 12.30 | 28.30 |
| C. W. Phillips | 3 | 4.00 | 12.00 | | ..... | 12 00 |

M. J. WRAGG,
W. C. BROWN,
M. MCDONALD,
Committee.

## EXECUTIVE COMMITTEE MEETING.

### THURSDAY, APRIL 7, 1904.

The committee met on call of president, with all members present.

The superintendent of grounds was ordered to grade the ground lying east of the Clark dining hall. Also, to move the barber shop from its present location to the west side of Rock Island Avenue, immediately north of the Chicago Great Western building. Also, to move small dining hall to a position on the west side of Rock Island Avenue and immediately north of the brick sidewalk running to the stock pavilion; and the large dining hall to a position a little south of speed barn No. 1.

A location for police headquarters was selected on Capital Avenue immediately west of the superintendent of tickets' office.

Horse barns No's 10, 11 and 12 were ordered taken down in sections and added to the end next to the ring of the other horse barns.

The secretary was authorized to issue warrants in payment of pay rolls of superintendent of grounds when same were presented by Mr. Deemer.

The secretary was authorized to receive bids for the erection of the new agricultural, horticultural and dairy building, complete, except as to grading, and the superintendent of grounds was instructed to proceed with the grading as per location selected by the board.

## EXECUTIVE COMMITTEE MEETING.

### April 28, 1904.

The committee met at call of president, for the purpose of opening bids received for the erection of the agricultural, horticultural and dairy building, and any other business that would properly come before them.

The matter of band music for the Iowa State Fair of 1904 was considered, and on motion of Mr. Cameron the Iowa Brigade Band of Oskaloosa was engaged at a salary of $700.

The time set for the opening of bids being 2:00 o'clock P.M., and the time having arrived, the committee proceeded to open the bids in the order filed by the secretary. The following bids were received:

| Bidders. | Bedford Stone complete, without structural iron. | Complete Cleveland stone. | Complete LeGrande stone. | Deduct for cement floor. | Structural steel work. | Deduct for grading. | If all black paving brick used to face. | Complete without grading, cement floor and steel. |
|---|---|---|---|---|---|---|---|---|
| Henry W. Schluter, Chicago, Ill | $51,424.00 | ........ | ...... | $2,500 | $ 14,000 | $ 250 | .......... | $34,674.00 |
| Capital City Brick and Pipe Co | 55,636.73 | ........ | .... | 5,000 | ........ | 2,000 | $56,092.73 | 48,636.73 |
| Chas. Weitz Sons | 38,194.00 | $ 38,944 | .... | 3,180 | 9,950 | 440 | 38,544.00 | 34,574.00 |
| J. E. Lovejoy | 43,975.00 | 44,725 | ...... | 2,500 | ........ | 300 | add<br>400.00 | 41,175.00 |
| Wm. Hamilton | 54,411.00 | 55,161 | ...... | 4,138 | ........ | 1,110 | add<br>416.00 | 49,163.00 |
| W. F. Mitchell & Co | 41,545 00 | .... | ..... | 3,000 | .... | 2,000 | .... | 36,545.00 |

STRUCTURAL STEEL WORK—EXCLUSIVE.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Des Moines Bridge and Iron Co | ......... | ........ | ...... | .... | 9,500 | .. .. | .......... | .......... |
| Modern Steel Structural Co., Waukesha, Wis | .......... | ........ | .... | ...... | 8,720 | ..... | .......... | ........ |
| Union Foundry Works, Chicago, Ill | .... | ........ | | ...... | 13,650 | ..... | ......... | ...... |

After carefully considering all bids received, the committee deemed it advisable to let a separate contract for the erection of the structural iron work, and on motion of Mr. Cameron, the bid of the Modern Steel Structural Co., of Waukesha, Wis., of $8,720 was accepted; this being the lowest bid received according to the plans and specifications, and acceptance was subject to their filing satisfactory bond within ten days. This motion was seconded by Mr. Simpson, and on roll call was declared to have carried.

Mr. Cameron moved that the general contract, not including structural iron work, be awarded to Charles Weitz Sons, of Des Moines, Iowa, their bid being the lowest, according to the plans and specifications, with the following deductions: Deduct $3,180 if cement floor is omitted, and $440 if grading is omitted; thus making the amount of bid as accepted $34,574; this acceptance with the provision that satisfactory bond is given and contract executed within ten days as per plans and specifications of said building. Motion was seconded by Mr. Simpson, and upon roll call was declared by the president to have carried by a unanimous vote.

The secretary was instructed to return the certified checks to all bidders, with the exception of the Modern Steel Structural Co., and Chas. Weitz Sons, which checks were to be returned upon completion of contracts and filing of bond.

The secretary was instructed to issue warrant to Smith & Gage, architects, in the sum of $1,200, same being partial payment for plans and specifications of the Agricultural, Horticultural and Dairy building, it being agreed that the architects were to receive five per cent (5%) of the cost of the building for their work. The architects were to superintend the construction of the building, and Mr. J. H. Deemer was selected to act as superintendent in behalf of the Department of Agriculture.

Warrants were issued in payment of per diem and mileage as follows:

| | |
|---|---|
| To W. W. Morrow, 4 days and mileage | $24.20 |
| To C. E. Cameron, 4 days and mileage | $30.00 |

## EXECUTIVE COMMITTEE MEETING.

### WEDNESDAY, MAY 5, 1904.

Committee met on call of president, with all members present.

The day was spent at the fair grounds looking over improvements that were being made under the direction of Superintendent Deemer.

A resolution was adopted instructing the Superintendent of Tickets to count all free tickets taken in at the gates during the fair.

Mr. Gillette, representing Mr. M. W. Savage of Minneapolis, Minn., was before the committee and submitted a proposition for the appearance of Dan Patch at the Iowa State Fair of 1904. The committee did not deem it advisable to accept of the proposition submitted by Mr. Gillette, but after carefully considering the mater decided to make the following offer: "That we give Mr. Savage $1,000 and fifty (50) per cent of the receipts received on the sale of tickets at the gates and grandstand over and above the receipts from these sources received on Thursday of the fair of 1902." Nothing in above proposition shall be construed to mean tickets sold after five o'clock P. M., at the gate or grandstand.

## EXECUTIVE COMMITTEE MEETING.

### TUESDAY, MAY 17, 1904.

Committee met on call of president, with all members present.

The day was spent in inspecting the work on improvements being done at the fair grounds.

A telegram was received by the secretary from Mr. Savage, accepting the proposition for the appearance of Dan Patch at the Iowa State Fair of 1904. The secretary was instructed to close the contract with Mr. Savage, providing he would waive the clause in regard to free tickets.

The bond of the Modern Steel Structural Company, was received, and on motion approved.

Warrants were issued in payment of per diem and mileage as follows:

| | |
|---|---|
| For Executive Meeting, May 5, 1904: | |
| To C. E. Cameron, 2 days $8.00, mileage $14.00; total | $22.00 |
| For Executive Committee Meeting, May 17, 1904: | |
| To C. E. Cameron, 4 days $16.00, mileage $14.00; total | $30.00 |
| For Executive Meeting, May 5, 1904: | |
| To W. W. Morrow, 3 days $12.00, mileage $8.20; total | $20.20 |
| For Executive Committee Meeting, May 17, 1904: | |
| To W. W. Morrow, 3 days $12.00, mileage $8.20; total | $20.20 |

On motion the committee adjourned.

## EXECUTIVE COMMITTEE MEETING.

### Thursday and Friday, June 9 and 10, 1904.

The committee met on call of the president, with all members present.

The committee spent the major portion of the time at the fair grounds inspecting the work of improvements and repairs under way.

It was decided to run a storm sewer from the south fence north to the stock pavilion, then northeast to the agricultural, horticultural and dairy building, and the secretary was instructed to purchase tile and sewer pipe necessary for same.

On motion it was decided to allot space in the new building for the three departments as follows: Center section for the agricultural department; south section for the horticultural department, and north section for the dairy department.

Mr. Deemer was instructed to accept bid of $165 for painting the exposition building with two coats of white lead and oil, the department to furnish all materials.

The secretary was authorized to offer prizes for pictures taken during the fair.

The secretary was authorized to arrange for a Sunday concert with the Eleventh Cavalry Band from Ft. Des Moines.

The secretary was instructed to issue warrant for $300 in favor of Smith & Gage, same being second payment for plans and specifications, as per contract.

Messrs. Morrow and Simpson were appointed as a special committee for the purpose of making a trip to Chicago to select attractions for the fair of 1904.

Warrants were issued in payment of per diem and mileage as follows:

| | |
|---|---|
| To W. W. Morrow, 3 days and mileage................. | $20.20 |
| To C. E. Cameron, 3 days and mileage................. | 30.00 |

## EXECUTIVE COMMITTEE MEETING.

### JUNE 23 AND 24, 1904.

Committee met on call of president, with all members present.

The committee visited the fair grounds and expressed themselves as being well satisfied with the progress made on the improvements up to date.

A communication from Mr. T. Z. Magerrell, Supervising Deputy of the Court of Honor, was read, asking that the Court of Honor be permitted to hold their annual picnic on the fair grounds on Wednesday, August 22d. The request was granted and the secretary instructed to arrange to give them the use of the large assembly tent for a two hours' speaking program on Wednesday afternoon.

One of the horses belonging to the department not being in a fit condition to work, the committee decided to sell same and purchase another to take her place, and the secretary was authorized to issue a warrant for $150 in payment of the horse purchased.

The secretary was authorized to arrange programme for the races of the fire departments.

## EXECUTIVE COMMITTEE MEETING.

### JULY 7 AND 8, 1904.

The committee met on call of president, with all members present; also, Messrs. St. John and Wragg.

The president stated that the object of the meeting was to ascertain and make suitable arrangements for the interior fittings of the agricultural, horticultural and dairy building for this year. The committee, with Messrs. St. John & Wragg, spent the time at the fair grounds, talking over the arrangements, etc. Plans were finally adopted, and Mr. Deemer was instructed to fit up the building as per plans arranged.

## EXECUTIVE COMMITTEE MEETING.

### JULY 21, 1904.

Committee met on call of president, with all members present.

The committee visited the fair grounds to ascertain the amount of damage done by recent rains. The race track was found to be in very bad shape, and Mr. Deemer was instructed to proceed at once to the resoiling of same.

The superintendent of grounds was instructed to build a retaining wall along the bank east of the new building.

Plans and specifications for the proposed porch along the west side of the Woman's Building were presented by the secretary, and on motion it was decided to proceed at once to the work of building same. Also, the superintendent of grounds was instructed to have a floor laid in the Woman's Building, and the secretary was instructed to purchase a limited amount of furniture to be placed in same.

# MEETING OF THE STATE BOARD OF AGRICULTURE.

## FRIDAY MORNING, AUGUST 26, 1904.

Board met at call of President Morrow, and on roll call the following members were found to be present: Morrow, Cameron, Simpson, Brown, St. John, Packard, Legoe, Wragg, Ledgerwood, McDonald, Pike, Wadsworth and Johnston.

Mr. E. M. Moore of Orchard Lake, Michigan, appeared before the board and made complaint in regard to the disqualification of his sheep in the show ring by the judge. After hearing Mr. Moore, and statement of Mr. Pike, Superintendent of the Sheep Department, the following communication from the judge was read:

TO THE BOARD OF MANAGERS, IOWA STATE FAIR:

*Gentleman*,—In the case of Mr. E. M. Moore, who was an exhibitor in the Delaine class of Merino sheep, there is a complaint by Mr. Moore that he was not properly treated in his exhibit, being discriminated against by me.

I believe his sheep to be a cross-breed sheep, having a strong Spanish or American Merino cross, thus making him ineligible for exhibition in the Delaine show. I asked him for evidence of their purity of blood; he replied that they were registered in one of the Delaine registers. I asked him for his evidence of this, and he said that he would have to send for it. He also said that all the best breeders in Ohio and Pennsylvania are now crossing these two families of Merinos and the produce are being accepted in both the American and Delaine registers of Ohio. He did not deny the claim I made of them being a cross-breed sheep, but justified the cross by the improvement it made over the original Delaine type. This I concede, but my object was to protect your Delaine classification by not letting in ineligible sheep. Mr. Moore's sheep, if proven to be pure Delains, I would pronounce a better sheep than those they were competing with. He withdrew from the show ring, in place of continuing in and immediately demanding a ruling from the board.

His conceding that his sheep were cross-bred only corroborates my judgment when his sheep were first brought in the ring. I do not want to impose any hardship upon Mr. Moore, and if anything can be done in your judgment, to relieve him, I shall be entirely satisfied.

It is a question whether the judge should protect the innocent exhibitor in his honestly classed animals, or throw him entirely upon his own resources to protest. I possibly assumed too much in the interest of the exhibitors of pure bred type of Delaines and the State Fair sheep show.

Yours truly,
G. W. HERVEY, Judge,
Sheep Department.

The board decided that inasmuch as no protest had been presented in compliance with the rules, they had no jurisdiction in the matter.

Mr. Cameron moved that no exhibits be allowed to be taken from the grounds until after 4:00 o'clock P.M., except on the recommendation of the superintendent of the department and the president. Motion prevailed.

On motion the board adjourned to meet at 1:00 o'clock P.M.

### AFTERNOON MEETING.

Board met at 1:00 o'clock P.M., pursuant to adjournment, with the following members present: Morrow, Simpson, Phillips, Brown, Packard, Wragg, Ledgerwood, Johnston and Wadsworth.

The time was taken up in allowing pay rolls presented by the superintendents of the several departments.

Mr. Packard offered the following resolution, and on motion same was adopted:

> Whereas: The daily and weekly press of the State have most generously and widely advertised the State Fair, which has contributed so much to the success of the best fair ever held, therefore, be it
>
> Resolved: That the thanks of the State Board of Agriculture be tendered the press for their support.

On motion the board adjourned to meet at 9:00 o'clock A. M., Saturday.

### SATURDAY AUGUST 27, 1904.

Board met at 9:00 o'clock A. M., pursuant to adjournment, with the following members present: Morrow, Cameron, Simpson, St. John, Packard, Legoe, Wragg, McDonald, Brown, Johnston, Pike and Phillips.

Mr. Brown moved that the executive committee be authorized to secure cinders for the fair grounds, which motion prevailed.

Mr. Packard moved that the executive committee be authorized to expend what money is necessary for the purpose of repairing walks and improving and decorating the grounds. Motion was seconded by Mr. Brown and prevailed.

Mr. Brown moved that Mr. Jas. H. Deemer, superintendent of grounds, be allowed a vacation of thirty days, which motion prevailed.

Mr. Packard offered the following resolution, and on motion of Mr. Wadsworth same was unanimously adopted:

Whereas, The city of Des Moines, through its citizens and business men, have heartily co-operated with the State Fair management toward the success of the State Fair; and

Whereas, Col. E. D. Thomas, with the troops under his command, supplied one of the most attractive features of the fair; therefore, be it

Resolved, That the thanks of the State Board of Agriculture are hereby tendered to the city of Des Moines and to Colonel Thomas and to the Eleventh United States Cavalry.

Mr. Wadsworth moved that the committee on per diem and mileage be appointed. Motion prevailed. President appointed as such committee Messrs. Wadsworth, Johnston and Pike.

Committee on per diem and mileage report as follows:

| Name. | Days. | Rate. | Amount. | Miles. | Amount. | Total. |
|---|---|---|---|---|---|---|
| W. W. Morrow | 19 | 4.00 | $ 76.00 | 82 | $ 8.20 | $ 84.20 |
| C. E. Cameron | 16 | 4.00 | 64.00 | 140 | 14.00 | 78.00 |
| R. S. Johnston | 19 | 4.00 | 76.00 | 158 | 15.80 | 91.80 |
| C. W. Phillips | 20 | 4.00 | 80.00 | | | 80.00 |
| W. C. Brown | 19 | 4.00 | 76.00 | 102 | 10.20 | 86.20 |
| R. T. St. John | 15 | 4.00 | 60.00 | 195 | 19.50 | 79.50 |
| S. B. Packard | 17 | 4.00 | 68.00 | 58 | 5.80 | 73.80 |
| T. C. Legoe | 19 | 4.00 | 76.00 | 100 | 10.00 | 86.00 |
| M. J. Wragg | 19 | 4.00 | 76.00 | 16 | 1.60 | 77.60 |
| John Ledgerwood | 19 | 4.00 | 76.00 | 87 | 8.70 | 84.70 |
| M. McDonald | 20 | 4.00 | 80.00 | 65 | 6.50 | 86.50 |
| J. W. Wadsworth | 29 | 4.00 | 116.00 | 123 | 12.30 | 128.30 |
| H. L. Pike | 19 | 4.00 | 76.00 | 200 | 20.00 | 96.00 |
| J. C. Simpson | | | | | | 25.00 |
| John Cownie | | | | | | 25.00 |
| Total | | | | | | $ 1,182.60 |

Mr. McDonald moved the board adjourn to meet on call of president. Motion prevailed.

J. C. SIMPSON, Secretary.

## MEETING OF THE EXECUTIVE COMMITTEE.

### FRIDAY, SEPTEMBER 23, 1904.

Committee met at call of president, with all members present.

The question of placing insurance on the Agricultural-Horticultural and Dairy building was brought up, and the secretary was instructed to have fire and windstorm insurance to the amount of $15,000 placed on same.

Secretary was instructed to have renewed, the insurance on the blanketed form policy to the amount of $38,700, this insurance expiring on the 26th day of September, and to issue warrants in payment of premiums on insurance when same has been written.

Secretary was authorized to issue warrants to Chas. Weitz Sons, general contractors of the Agricultural-Horticultural and Dairy building, to the Model Steel Structural Co., on the iron contract, and to Smith & Gage, architects, to an amount to balance said contracts in full, when building has been fully completed according to the plans and specifications.

Mr. Deemer, superintendent of grounds, was instructed to replace all window lights which were destroyed recently by hail, and to clean up the grounds and finish any work which had been left unfinished at the time of the fair.

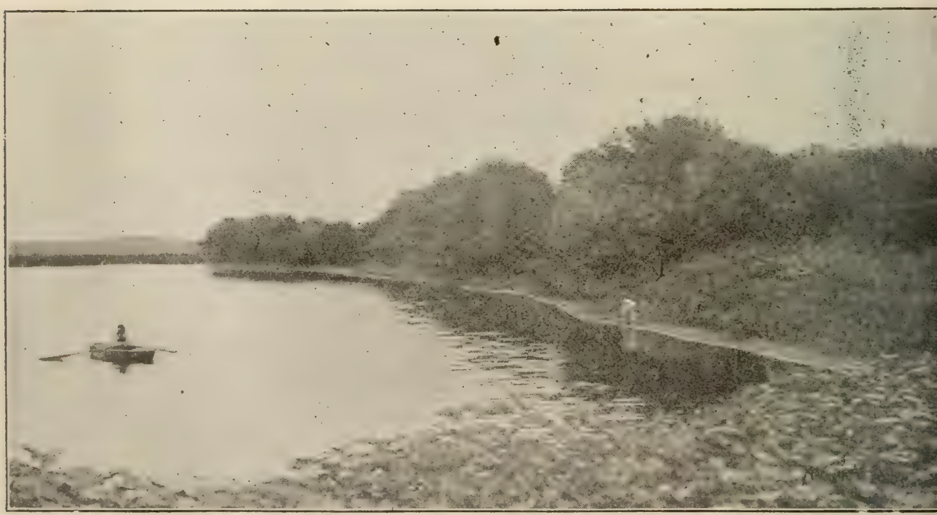
The State Board of Control during the month of October having kindly offered to turn over to the department of agriculture the Iowa agricultural and horticultural exhibits and equipments at the Louisiana Purchase Exposition at St. Louis, providing the department would send a man to take charge of same at the close of the Exposition, the secretary was instructed to authorize Mr. M. J. Wragg to go down and take charge of same for the department, with the provision that the total expense was not to exceed $150.

## AUDITING COMMITTEE MEETING.

### SEPTEMBER 23 AND 24, 1904.

The auditing committee met on the days above mentioned with members present as follows: J. W. Wadsworth, C. W. Phillips and W. C. Brown.

All bills on file were passed upon, and the secretary authorized to issue warrants in payment thereof.



Crystal Lake, Lakewood Farm, Lyon County, Iowa.

# PART II.

# REPORT OF THE IOWA WEATHER AND CROP SERVICE FOR 1904.

## WITH MAP SHOWING IOWA'S CORN CROP FOR PAST TEN YEARS.

JOHN R. SAGE, DIRECTOR.

## METEOROLOGICAL SUMMARY FOR THE YEAR 1904.

BAROMETER.—The mean pressure for the year was 30.04 inches. The highest observed pressure was 30.85 inches, on February 10th, at Sioux City; lowest pressure, 29.09 inches, on December 27th, at Dubuque. Range for the State, 1.76 inches.

TEMPERATURE.—The mean temperature for the State was 46.3°, which is 0.4° below normal. The highest temperature reported was 100°, on July 17th, at Marshalltown. The lowest temperature reported was 32° below zero, on January 27th, at Elkader and Fayette. Range for the year, 132°.

PRECIPITATION.—The average amount of rain and melted snow for the year, as shown by complete records of 96 stations, was 28.74 inches, which is 2.68 inches below the normal, and 6.92 inches below the average amount in 1903. The greatest amount recorded at any station for the year was 38.93 inches, at Keokuk. Least amount recorded 19.34 inches, at Vinton. The greatest monthly rainfall was 11.97 inches, at Thurman, in July; least monthly amount, none, at Rockwell City, in November. The greatest amount in any 24 consecutive hours was 7.73 inches, at De Soto, July 19th. The average number of days on which .01 of an inch or more of rain fell was 75.

WIND AND WEATHER.—The prevailing direction of the wind was northwest. Highest velocity reported, 68 miles an hour, in Sioux City, from the northwest on March 2d. Average daily movement, 216 miles. There were 164 clear days, 97 partly cloudy, and 105 cloudy days; as against 156 clear days, 100 partly cloudy, and 109 cloudy days in 1903.

## SUMMARY BY MONTHS.

JANUARY —The monthly mean temperature for the State, as shown by records of 111 stations, was 14.0°, which is 4.2° below the normal. By sections the mean temperatures were as follows: Northern section, 10.1°; central section, 14.1°; southern section, 17.8°. The highest monthly mean was 21.6° at Red Oak; lowest monthly mean, 6.6° at Charles City. The highest temperature reported was 57°, at Red Oak, on the 19th; lowest temperature reported, 32° below, at Elkader and Fayette, on the 27th. The average monthly maximum was 45.4°; average monthly minimum, 23.2°. Greatest daily range, 49°, at Atlantic and Villisca; average of greatest daily ranges, 34.2°. Average precipitation for the State as shown by records of 122 stations, was 1.18 inches, which is 0.21 of an inch above the normal. The averages by sections were as follows: Northern section, 0.49 of an inch; central section, 1.06 inches; southern section, 2.00 inches. The largest amount reported was 3.68 inches, at Lacona; least amount reported 0.02 of an inch, at Storm Lake. The greatest daily rainfall reported was 2.45 inches at Belle Plaine, on the 20th. Average number of days on which .01 of an inch or more was reported, 6. Prevailing direction of the wind, northwest; highest velocity reported, 50 miles per hour, from the southeast, at Sioux City, on the 18th. Average number of clear days, 12; partly cloudy, 8; cloudy, 11.

FEBRUARY.—The monthly mean temperature for the State, as shown by records of 107 stations, was 14.8 degrees, which is 4.8° below normal. By sections the mean temperatures were as follows: Northern section, 10.7°; central section, 15.0°; southern section, 18.8°. The highest monthly mean was 21.6°, at Keokuk; lowest monthly mean, 7.2°, at Estherville.

The highest temperature reported was 70°, at Keosauqua, on the 6th; lowest temperature reported, 26°, at Fayette, on the 1st. The average monthly maximum was 51.3°, average monthly minimum, 14.4° below zero. Greatest daily range, 60.0°, at Dennison; average of greatest daily ranges, 41.0°. Average precipitation for the State as shown by records of 118 stations, was .41 of an inch, which is .63 of an inch below normal. The average by sections were as follows: Northern section, .63 of an inch; central section, .35 of an inch; southern section, .25 of an inch. The largest amount reported was 1.99 inches, at Ridgeway; least amount reported, trace at Osceola and Thurman. The greatest daily rainfall reported was .84.of an inch, at Ridgeway on the 17th and 18th. Average number of days on which .01 of an inch or more was reported, 4. Prevailing direction of the wind, northwest; highest velocity reported, 61 miles per hour, from the northwest, at Sioux City, on the 2d. Average number of clear days, 10; partly cloudy, 9; cloudy, 10.

MARCH.—The monthly mean temperature for the State, as shown by records of 116 stations, was 34.8°, which is 2.4° above normal. By sections the mean temperatures were as follows: Northern section, 32.4°, which is 2.8° above normal; central section, 34.9°, which is 2.7° above normal; southern section, 37.0°, which is 1.1° above normal. The highest monthly mean was 38.6° at Burlington, Guthrie Center, Glenwood, Keokuk, Osceola and Ottumwa; lowest monthly mean, 27.0° at Cresco.

The highest temperature reported was 78.0° at Ottumwa on the 23d; lowest temperature reported 3° at Columbus Junction on the 3d. The average monthly maximum was 62.9°; average monthly minimum, 4.6°. Greatest daily range, 55.0° at Sioux City; average of greatest daily ranges 36.8° Average precipitation for the State as shown by records of 127 stations, was 2.18 inches, which is 0.35 of an inch above normal. The averages by sections were as follows: Northern section, 1.74 inches, which is .12 of an inch above normal; central section, 2.05 inches, which is .17 of an inch above normal; southern section, 2.74 inches, which is .17 of an inch above normal. The largest amount reported was 4.57 inches at Bedford; least amount reported, .50 of an inch, at Ida Grove and Sioux City. The greatest daily rainfall reported was 2.35 inches at Bedford on the 30th. Average number of days on which .01 of an inch or more was reported, 7. Prevailing direction of the wind, northwest; highest velocity reported, 68 miles per hour, from the northwest, at Sioux City, on the 2d. Average number of clear days, 8; partly cloudy, 8; cloudy, 15.

April.—The monthly mean temperature for the State, as shown by records of 115 stations, was 44.1°, which is 5.2° below normal. By sections the mean temperatures were as follows: Northern section 42.4°, which is 4.9° below normal; central section 44.4°, which is 4.4° below normal; southern section 45.5°, which is 6.7° below normal. The highest monthly mean was 47.8° at Ottumwa; lowest monthly mean, 40.2° at Sibley. The highest temperature reported was 86°, at Sigourney and Forest City on the 22d and 23d; lowest temperature reported 13°, at Primghar on the 11th. The average monthly maximum was 77.1°; average monthly minimum 20.9°. Greatest daily range, 48° at Forest City; average of greatest daily ranges 37.2°. Average precipitation for the State, as shown by records of 126 stations, was 3.63 inches, which is .74 of an inch above normal. The averages by sections were as follows: Northern section 2.73 inches, which is .11 of an inch above normal; central section 3.48 inches, which is .58 of an inch above normal; southern section 4.68 inches, which is 1.57 inches above normal. The largest amount reported was 8.97 inches at St. Charles; least amount reported, 1.52 inches at Elkader. The greatest daily rainfall reported was 3.11 inches at Sigourney on the 25th. Average number of days on which .01 of an inch or more was reported, 7. Prevailing direction of the wind, northwest; highest velocity reported, 56 miles per hour, from the northwest, at Sioux City, on the 11th. Average number of clear days, 15; partly cloudy, 6; cloudy, 9.

May.—The monthly mean temperature for the State, as shown by records of 114 stations, was 59.6°, which is 0.8° below normal. By sections the mean temperatures were as follows: Northern section, 58.2°, which is 1.1° below normal; central section, 59.9°, which .3° below normal, southern section, 60.6°, which is 1.4° below normal. The highest monthly mean was 62.4°, at Burlington, Onawa, Keokuk and Ridgeway; lowest monthly mean, 56.4°, at Sibley. The highest temperature reported was 93°, at Ridgeway, on the 22d; lowest temperature reported, 27°, at Charles City, on the 15th. The average monthly maximum was 85.8°; average monthly minimum, 34.3°; greatest daily range, 47°, at Monticello and Norwood; average of greatest daily ranges, 37.3°. Average precipitation for the State, as shown by records of 126 stations, was 3.78 inches, which is 2.35 of an inch below normal. The averages by sections were as follows: Northern section, 4.01 inches, which is .19 of an inch above normal; central section, 3.41 inches, which is .68 of an inch below normal; southern section, 3.92 inches, which is .43 of an inch below normal. The largest amount reported was 8.15 inches, at Onawa; least amount reported, 1.50 inches, at Clear Lake. The greatest daily rainfall reported was 3.33 inches, at Florence, on the 24th and 25th. Average number of days on which .01 of an inch or more was reported, 8. Prevailing direction of the wind, southeast; highest velocity reported, 41 miles per hour, from the south, at Sioux City, on the 4th. Average number of clear days, 13; partly cloudy, 10; cloudy, 8.

JUNE.—The monthly mean temperature for the State, as shown by records of 114 stations, was 67.1°, which is 2.5° below normal. By sections the mean temperatures were as follows: Northern section, 65.7°, which is 2.6° below normal; central section, 67.5°, which is 2.0° below normal; southern section, 68.2°, which is 3.1° below normal. The highest monthly mean was 70.6°, at Monticello; lowest monthly mean 63.7° at Sibley. The highest temperature reported was 94° at Clinton, Larrabee, Ridgeway and Ruthven on the 23d and 24th; lowest temperature reported, 35° at Charles City on the 2d. The average monthly maximum was 88.1°; average monthly minimum, 45.9°. Greatest daily range, 45° at Pocahontas; average of greatest daily ranges, 33.4°. Average precipitation for the State, as shown by records of 126 stations, was 3.45 inches, which is 1.05 inches below normal. The average by sections were as follows: Northern section, 4.53 inches, which is .15 of an inch below normal; central section, 2.74 inches which is 1.56 inches below normal; southern section, 3.08 inches, which is 1.33 inches below normal. The largest amount reported was 8.35 inches at Humboldt; least amount reported, .44 of an inch, at Gilman. The greatest daily rainfall reported was 3.67 inches at Charles City on the 19th. Average number of days on which .01 of an inch or more was reported, 7. Prevailing direction of the wind, southeast; highest velocity reported, 58 miles per hour, from the northwest, at Sioux City, on the 28th. Average number of clear days, 13; partly cloudy, 10; cloudy, 7.

JULY.—The monthly mean temperature for the State, as shown by records of 119 stations, was 70.6°, which is 3.6° below normal. By sections the mean temperatures were as follows: Northern section 69.1°, which is 3.9° below normal; central section 71.0°, which is 3.1° below normal; southern section 71.70°, which is 3.9° below normal. The highest monthly mean was 74.0° at Keokuk; lowest monthly mean, 66.5° at Cresco. The highest temperature reported was 100°, at Marshalltown on the 17th; lowest temperature reported, 38°, at Fayette on the 2d. The average monthly maximum was 93.1°; average monthly minimum, 46.8°. Greatest daily range, 43°, at Logan; average greatest daily ranges, 33.4°. Average precipitation for the State, as shown by records of 117 stations, was 4.41 inches, which is .16 of an inch above normal. The averages by sections were as follows: Northern section, 3.77 inches, which is .41 of an inch below normal; central section, 4.47 inches, which is .38 of an inch above normal; southern section, 5.00 inches, which is .54 of an inch above normal. The largest amount reported was 11.97 inches at Thurman; least amount reported, 1.28 inches, at Plover. The greatest daily rainfall reported was 7.73 inches at De Soto on the 19th. Average number of days on which .01 of an inch or more was reported, 10.

Prevailing direction of the wind, southwest; highest velocity reported, 42 miles per hour, from the northwest, at Sioux City, on the 3d. Average number of clear days, 16; partly cloudy, 9; cloudy, 6.

August.—The monthly mean temperature for the State, as shown by the records of 115 stations, was 69.1°, which is 2.7° below normal. By sections the mean temperatures were as follows: Northern section, 67.3°, which is 3.2°, below normal; central section, 69.2°, which is 2.4° below normal; southern section, 70.7°, which is 2.9° below normal. The highest monthly mean was 73.3° at College Springs; lowest monthly mean, 65.0° at New Hampton and Sibley. The highest temperature reported was 97°, at Mt. Ayr and Waukee, on the 13th; lowest temperature reported 35°, at Earlham, on the 8th. The average monthly maximum was 91.4°; average monthly minimum, 44.0°. Greatest daily range, 45° at Rock Rapids; average of greatest daily ranges, 35.1°. Average precipitation for the State, as shown by records of 126 stations, was 3.43 inches, which just equals the normal. The averages by sections were as follows: Northern section, 2.89 inches, which is .16 of an inch below normal; central section, 3.24 inches, which is .29 of an inch below normal; southern section, 4.15 inches, which is .45 of an inch above normal. The largest amount reported was 6.75 inches at Fort Dodge; least amount reported, .66 of an inch, at Sibley. The greatest daily rainfall reported was 4.00 inches at Fort Dodge on the 29th. Average number of days on which .01 of an inch or more was reported, 7. Prevailing direction of wind, southwest; highest velocity reported, 42 miles per hour, from the south, at Sioux City, on the 3d. Average number of clear days, 17; partly cloudy, 8; cloudy, 6.

September.—The monthly mean temperature for the State, as shown by the records of 114 stations, was 64.0°, which is .4° above normal. By sections the mean temperatures were as follows: Northern section, 61.8°, which is .5° below normal; central section, 64.3°, which is 1.1° above normal; southern section, 65.6°, which is .2° above normal. The highest monthly mean was 68.6°, at Belknap; lowest monthly mean, 59.0°, at Sibley. The highest temperature reported was 94°, at Wilton Junction, on the 11th; lowest temperature reported, 30°, at Atlantic, Earlham, Hanlontown and Rock Rapids, on the 14th, 15th and 21st. The average monthly maximum was 88.9°, average monthly minimum, 34.7°. Greatest daily range, 54°, at Estherville; average of greatest daily range, 36.5°. Average precipitation for the State, as shown by the records of 122 stations, was 2.78 inches, which is .52 of an inch below normal. The averages by sections were as follows: Northern section, 2.67 inches, which is .74 of an inch below normal; central section, 2.13 inches, which is 1.13 inches below normal; southern section, 3.53 inches, which is .28 of an inch above normal. The largest amount reported was 8.33 inches, at Keokuk; least amount reported, .09 of an inch at Ida Grove. The greatest daily rainfall reported was 3.1 inches, at Keokuk, on the 18th and 19th. Average number of days on which .01 of an inch or more was reported, 7. Prevailing direction of the wind, south and southwest; highest velocity reported, 39 miles per hour from the northwest, at Sioux City, on the 1st. Average number of clear days, 13; partly cloudy, 8; cloudy, 9.

October.—The monthly mean temperature for the State as shown by records of 111 stations, was 53.1°, which is 1.0° above normal. By sections the mean temperatures were as follows: Northern section, 51.1°, which is .4° above normal; central section, 53.0° which is 1.6° above normal; southern section, 55.2°, which is .7° above normal. The highest monthly mean was 58.4° at Belknap; lowest monthly mean, 49.2° at Estherville. The highest temperature reported was 96°, at Waukee on the 4th; lowest temperature reported, 16° at Earlham on the 27th. The average monthly maximum was 81.9°; average monthly minimum, 23.2°. Greatest daily range, 51° at Waukee; average of greatest daily range, 36.9° Average precipitation for the State as shown by records of 120 stations, was 1.67 inches, which is .73 of an inch below normal. The average by sections were as follows: Northern section, 2.50 inches, which is .29 of an inch above normal; central section, 1.60 inches, which is .78 of an inch below normal; southern section, .90 of an inch, which is 1.73 inches below normal. The largest amount reported was 4.43 inches at Sioux Center; least amount reported, .14 of an inch at Bonaparte and Corydon. The greatest daily rainfall reported was 3.00 inches at Olin on the 9th. Average number of days on which .01 of an inch or more was reported, 6. Prevailing direction of the wind, southeast, south and northwest; highest velocity reported, 52 miles per hour from the northwest, at Sioux City, on the 21st. Average number of clear days, 15; partly cloudy, 8; cloudy, 8.

NOVEMBER.—The monthly mean temperature for the State, as shown by records of 110 stations, was 41.0°, which is 6.3° above normal. By sections the mean temperatures were as follows: Northern section, 39.3°, which is 7° above normal; central section, 40.7°, which is 6.1° above normal; southern section, 43.1°, which is 5.4° above normal. The highest monthly mean was 45.8°, at St. Charles; lowest monthly mean, 37.4° at Maquoketa. The highest temperature reported was 80°, at Ruthven and Waukee, on the 18th; lowest temperature reported, 4°, at Britt, on the 30th. The average monthly maximum was 71.1°; average monthly minimum, 9.6°. Greatest daily range, 56°, at Rock Rapids; average of greatest daily ranges, 37.8°. Average precipitation for the State, as shown by records of 119 stations, was .15 of an inch, which is 1.25 inches below normal. The averages by sections were as follows: Northern section, .17 of an inch, which is 1.19 inches below normal; central section, .15 of an inch, which is 1.28 inches below normal; southern section, .14 of an inch, which is 1.30 inches below normal. The largest amount reported was .50 of an inch, at Bonaparte and Glenwood; least amount reported, none, at Rockwell City. The greatest daily rainfall reported was .50 of an inch, at Bonaparte and Glenwood, on the 9th and 10th respectively. Average number of days on which .01 of an inch or more was reported, 1. Prevailing direction of the wind, northwest; highest velocity reported, 43 miles per hour, from the northwest, at Sioux City, on the 29th. Average number of clear days, 20; partly cloudy, 6; cloudy, 4.

DECEMBER.—The monthly mean temperature for the State, as shown by records of 114 stations, was 23.4°, which is .5° above normal. By sections the mean temperatures were as follows: Northern section 20.6° which is .5° above normal; central section 23.5°, which is .3° above normal; southern section 26.1°, which is .4° above normal. The highest monthly mean was 29.9° at Keokuk; lowest monthly mean, 18.2° at Forest City. The highest temperature reported was 67°, at Albia, on the 22d; lowest temperature reported 19°, at Elkader, on the 14th. The average monthly maximum was

55.5°; average monthly minimum -8.8°. Greatest daily range 57°, at Maquoketa; average of greatest daily ranges, 36.8°. Average precipitation for the State, as shown by records of 119 stations, 1.44 inches, which is .15 of an inch above normal. The averages by sections were as follows: Northern section, 1.19 inches, which is .16 of an inch below normal; central section, 1.66 inches, which is .32 of an inch above normal; southern section, 1.48 inches, which .32 of an inch above normal. The largest amount reported was 3.68 inches at Newton; least amount reported, .06 of an inch at Storm Lake. The greatest daily rainfall reported was 2.53 inches at Newton on the 27th. Average number of days on which .01 of an inch or more was reported, 5. Prevailing direction of the wind, northwest; highest velocity reported, 57 miles per hour, from the northwest, at Sioux City, on the 27th. Average number of clear days, 12; partly cloudy, 7; cloudy, 12.

## REVIEW OF THE CROP SEASON, 1904.

The year 1904 was cooler than usual, the mean temperature being 46.3°, which is 0.4° below normal. The average precipitation was 28.74 inches, which is 2.68° below normal.

The winter was colder than usual. In January the average daily temperature was 14°, which is 4.2° below the State normal. The lowest temperature recorded was 32° below zero, on January 27th, at Elkader and Fayette. In February the mean temperature was 4.8° below normal, and the lowest was 26° below zero on the 1st. The soil was frozen to an unusual depth. March brought moderate temperature, but the prevalence of cloudiness prevented rapid thawing of the soil, and the ground was generally too wet for seeding operations.

April was abnormally cold, the records of 115 stations showing a daily deficiency of 5.2° in temperature. The average rainfall was 3.63 inches, which is an excess of .74 of an inch above the April average. There were some dry periods, however, with sufficient sunshine to afford ample opportunity for seeding and preparing the ground for planting corn. Seeding of spring wheat, oats and barley begun generally from the 1st to the 4th, and that work was practically completed in the larger part of the State about the 20th or 23d. Germination of seed was unusually slow, but at the close of April there were indications of a good stand, except on low, wet fields. Fruit buds appeared healthy and promising, but there were only a few blossoms visible prior to the 1st of May. The pastures and meadows wer unusually late in starting, and there was but little grass for stock at the end of the month. On the whole, though the growth of vegetation was much belated, the month was more favorable than the corresponding month in 1903.

May was nearly normal, the daily mean temperature showing a deficiency of only .8°. The average rainfall, 3.78 inches, was .35 of an inch below the May normal. In portions of the west central district, and in some of the southern counties, there was some heavy downpours, which caused much delay in planting, the great excess of moisture being due in large part to the saturated condition of the subsoil, resulting from abnormal rainfall in the preceding season. On the whole it was a favorable month, with sufficient warmth and moisture for grass and small grain, and general conditions favorable for farm work and the germination of the better qualities of seed. Except in quite limited areas, the corn crop was planted about as early as usual, and the soil was in very good condition. The month was especially favorable for the growth of grass in meadows and pastures, and for the small grain crops on well drained lands.

The hay crop was well assured; oats and spring wheat stooled out fairly well; potatoes made a fine start; garden truck was well advanced at close of the month, and the fruits promised a better yield than has been produced in recent years.

June was cooler than usual, with less than the normal amount of rainfall, and a large percentage of cloudiness in portions of the State. The daily average temperature was 2.5 degrees below normal. The precipitation was quite unequally distributed; the northern section receiving an average of 4.53 inches, the central section 2.74 inches, and the southern section 3.08 inches. The week ending June 6th brought excessive rains in all parts of the State, except portions of the east central district. The wet and cloudy weather of that week caused much delay in the cultivation of corn, and in large portions of the State the fields became weedy and the growth of corn was considerably retarded by cold nights and wet, cloudy weather. The second week was generally very favorable for field work and the growth of crops, the days being bright and warm with ideal conditions for cleaning out the corn fields. The week ending the 20th was also favorable, though the temperature was below normal. There was but little interruption of work, and fair progress was noted in the growth of all crops. From the 20th to the close of the month the temperature was abnormally low and there was more than usual cloudiness in the larger part of the State. Despite all the drawbacks, however, the corn crop advanced steadily, and at the close of the month the fields were generally clean and the stand was but little below the average of the past fifteen years. The month as a whole was favorable especially to small grain, which headed out about the usual time, though short in straw. The hay crop was well advanced and fairly good, especially in quality. Potatoes and garden vegetables were usually promising.

July was unseasonably cool, the mean temperature being 3.6° below normal. The warmest period was the second decade. The average rainfall for the State, 4.41 inches, was .18 of an inch above normal. The northern section received an average of 3.77 inches; central section, 4 47 inches; southern section, 5.00 inches. Rain in measurable quantity fell at one or more stations every day during the month. And yet the average number of clear days was 16; partly cloudy 9, and cloudy, 6. Generally there was sufficient sunshine to promote plant growth. The days were warm, and nights unusually cool. The heaviest storm of the month, in respect to rainfall, occurred on the night of the 19th, but the excessive downpour was limited to a few counties. On the whole the month was favorable for crops and field work. Corn was laid by from the 4th to the 15th—about a week later than usual. During the showery period in the early half of the month spring wheat and oats were attacked by rust. The wheat crop was damaged seriously, but oats were not very badly injured. The latter half of the month was favorable for harvest operations and most of the small grain was in shock or stack before August 1st. Haying progressed quite favorably and though the yield was lighter than the average the quality was superior, and most of it was secured in good order. Corn made notably fine progress, despite the cool weather, and at the close of the month that crop was much more advanced than was deemed possible earlier in the season. Potatoes, garden truck, apples, small fruit and all minor crops made normal advancement.

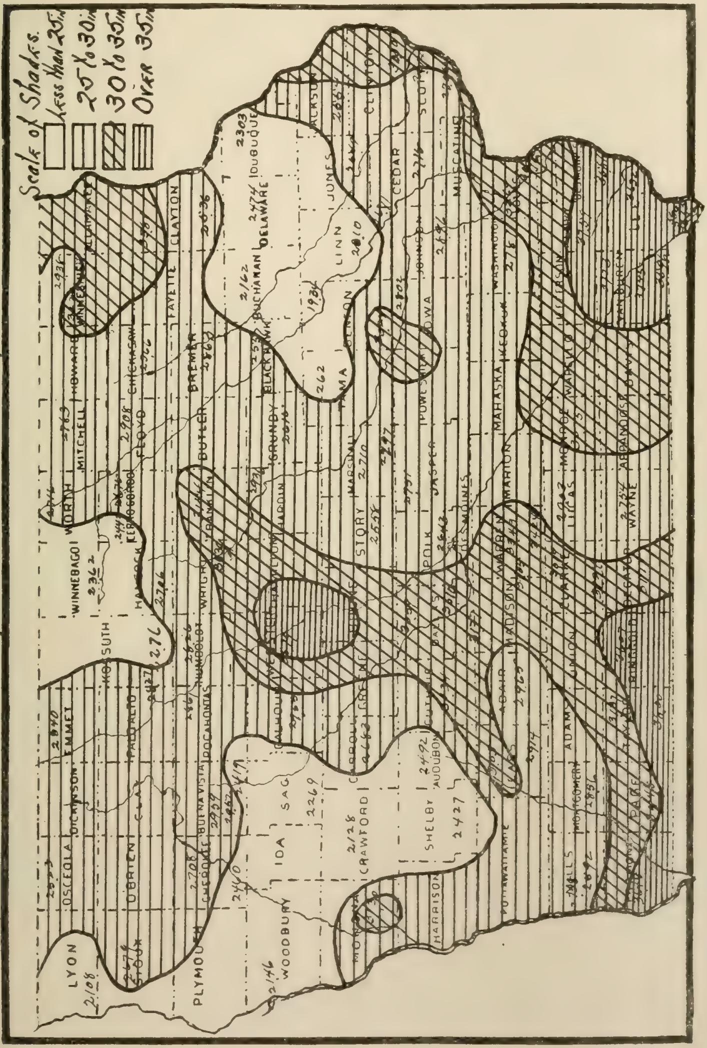
The average temperature of August, 1904, was exactly the same as August, 1903, 1902 and 1891. The mean temperature was 2.7° below the August normal. In the northern section it was 67.3°; central section, 69.2°; southern section, 70.7°. The month was mostly clear and warm by day, though unseasonably cool at night. The average rainfall was normal for the State, but in its distribution the larger amount was received in the south and eastern districts, where it was most needed. The bulk of the rainfall came about the 17th to 21st and 29th. There were, on the average, 17 clear days, 8 partly cloudy, and 6 cloudy, affording an ample amount of fair weather for harvesting, stacking, threshing, cutting wild hay, millet, etc., and fall plowing. In all these farm operations very good progress was made. The pastures were revived and made green as in June by the copious showers in the latter half of the month. The corn crop made fair advancement during the month, though in view of its belated condition its progress was not as rapid as seemed desirable. The most advanced portion of the crop was well filled and dented at the close of the month. Reports at that time indicated that about one-third of the crop, with favorable conditions, would be mature by September 20th, while the balance required abundant warmth and sunshine until October 1st to be safe from harm by killing frost. The crop was unusually rank, green and heavily eared. The minor crops were in good condition. Potatoes made heavy yield, and early apples were especially good and abundant. The yield of tomatoes and green corn for canning has been better than usual. Garden truck, cucumbers for pickling and melons yielded abundantly.

The average temperature of September was about normal for the State, the southern and central sections showing an excess,and the northern section a small deficiency. The coldest period was from about the 11th to the 22d. The average rainfall for the State was 2.78 inches, which amount is about .52 of an inch below the normal for September. In its distribution there was much inequality, ranging from less than a tenth of an inch at one station in the northwest to over eight inches in the southeast district. The southeast and northeast districts received the heaviest rainfall. The week ending September 12th was normal in temperature and sunshine, with very light rainfall, and generally favorable conditions for ripening the belated corn crop, a considerable portion of which was well dented, with husks and blades putting on the brown shade of autumn. The week ending the 19th brought several days of good ripening weather, but much anxiety for the immature portion of the corn crop was caused by the occurrence of light to heavy frosts on the mornings of the 12th, 14th and 15th, the cold wave extending to all districts in the State. A few stations also reported frost on the 21st. The lowest temperature reported was 30°, at four stations. The observed effects proved that the frosts were not "killing," and that the damage to the corn crop was limited to late planted fields in the bottom lands of the central valleys of the State. Broadly stated, the actual damage by frosts affected less than one-fourth of the area planted, and the shrinkage of the frosted portion of the crop was probably less than 20 per cent. This would indicate possible loss of 5 per cent of the crop for the State, as the direct result of frost. The cold weather of that period, however, retarded the development of the crop, and made it desirable to extend the ripening weather beyond the first of October. During the month good progress was made in the usual farm operations, such as plowing, seeding fall wheat and rye, harvesting potatoes, apples and millet, and threshing small grain. The yield of potatoes, and fall apples has been very satisfactory. The grape crop was heavy, and there has been a good yield of plums. The growth of all kinds of garden truck has been unusually heavy. The pastures have been much better than usual for September. At the close of the month it was estimated that ninety per cent of the corn crop was practically safe.

October was warmer and drier than usual, the daily mean temperature being about 1° above normal, and the average rainfall of the State was 0.73 of an inch below normal. The northern section received the largest amount, the average being about .29 of an inch above the October normal. The first frost of the month occurred on the morning of the 6th, and was heavy enough to kill vines and most of the cornstalks remaining green in the northern half of the State. In the southern half the frost was light, causing no damage. The first general killing frost covering the State occurred on the morning of the 23d, all crops being safe at that time. The bulk of the rainfall came in the first and second decades—mainly between the 5th and 20th, the balance of the month being dry and favorable for farm work, for drying out the corn crops and harvesting the miner crops. No better weather could be desired for preparing corn for cribbing than was prevalent from the 20th to the 31st. Good progress was made in harvesting the corn during the last week though the heavier ears contained considerable moisture. But the weather was cool by night, though moderate and clear by day. The heavy potato crop was harvested in good condition, the quality of the product being unusually good. Pastures were very good throughout the month. Good progress was made in fall plowing. The small acreage in fall wheat and rye showed an excellent growth and good stand. On the whole, October was a very mild and favorable month, crowning a fairly productive crop season.

The month was unusually warm and the driest November on record for the State. The mean temperature, as shown by records of 110 stations, was 41.0°, which is 6.3° above normal. The average in 1902 was .2 of a degree higher and 2.9° higher in 1899. The average precipitation for the State at 119 stations was .15 of an inch, which is 1.25 inches below normal. Nine stations reported no rain in measurable amount. Practically all the precipitation fell on the 9th and 10th, and the average number of clear days was twenty. The conditions were ideal for husking corn and drying out the surplus moisture. At the close of the month the bulk of the crop was harvested. Conditions were also favorable for fall plowing and general farm work of the late autumn period. The pasturage was better than usual, though the fields were brown. Winter wheat and rye suffered some damage for want of moisture.

The first decade of December brought continued fine weather with favorable conditions for gathering the corn and cribbing the entire crop. The season as a whole was favorable for the production of a fair output of the staple crops. Though germination and growth were belated, the warmth and dryness of autumn brought ample compensation to the patient and faithful tillers of the soil.


Annual Precipitation Chart 1904.
Scale of Shades.
Less than 25 in
25 to 30 in
30 to 35 in
Over 35 in

## CROP REPORT JUNE 1, 1904.

Reports received June 1st from country and township corespondents of the State Weather and Crop Service show the following results as to the number of acres and average condition of staple farm crops; also the condition of fruit and live stock.

CORN.—Total number of acres, 9,052,450—an increase of about 7 per cent as compared with the average of the past six years, and 1,500,000 acres in excess of the area actually harvested in 1903. The average condition of corn about June 1st was 90 per cent, or about 15 points above the estimated condition at corresponding date last year.

WHEAT.—The area of spring wheat sown this season appears to be only 775,040 acres, a decrease of about 377,000 acres as compared with the acreage in 1902. The winter wheat acreage is about 71,030 acres. Condition of spring wheat, 94 per cent; winter wheat, 85 per cent.

OATS.—Area seeded, 4,018,980 acres; a decrease of about 190,000 acres compared with the acerage of 1901, or about 5 per cent below the normal area. The condition is placed at 92 per cent.

BARLEY.—Area seeded, 493,370 acres; decrease since 1901, about 38,300 acres. Condition June 1st, 93 per cent.

RYE.—Area seeded, 99,590 acres; decrease since 1901, about 25,000 acres. Condition June 1st, 91 per cent.

FLAX.—Area seeded, 51,370 acres; decrease since 1901, 23,130 acres. Condition of crops, 85 per cent.

POTATOES.—Area planted, 113,250 acres; condition 95 per cent. Acreage about normal.

MEADOWS.—Area 2,797,640 acres; an average of recent years. Condition 96 per cent. Condition of pastures, 97 per cent.

CONDITION OF FRUIT.—Apples, 91; plums, 89; peaches, 48; grapes, 87; cherries, 83; strawberries, 94; raspberries, 88; blackberries, 77 per cent.

CONDITION OF LIVE STOCK —Cattle, 94; swine, 93; sheep, 97; horses, 95; foals, 93; spring pig crop, 85 per cent.

CONDITION OF CROPS JUNE 1, 1903.—Corn, 75; wheat, 93; oats, 93; barley, 96; rye, 94; potatoes, 91; flax, 84; meadows, 109; pastures, 107; apples, 70; cherries and plums, 35 per cent.

## CROP REPORT JULY, 1.

Following is a summary of reports received from correspondents of the State Weather and Crop Service, estimating the condition of the staple farm crops July 1, 1904. The reports generally show that the stand of corn and oats is materially lighter than the average, owing to defective seed; and all crops are several days later than usual, as a result of the late advent of spring. The general condition, however, is several points better than at the corresponding date last year, as will be seen by the figures below:

CONDITION JULY 1, 1904: Corn, 90 per cent; spring wheat, 91; winter wheat, 87; oats, 91; barley, 93; rye, 94; flax, 89; meadows, 90; pastures, 94; potatoes, 101; apples, 85; plums, 70; grapes, 89.

CONDITION JULY 1, 1903: Corn, 77 per cent; spring wheat, 88; oats, 87; barley, 89; rye, 98; flax, 85; meadows, 104; pastures, 107; potatoes, 96; apples, 70; plums, 49; grapes, 78.

## CROP REPORT AUGUST 1.

Tabulated reports received from correspondents of the Iowa Weather and Crop Service show the following estimates of the condition of the staple crops on August 1, 1904:

Spring wheat, 75 per cent; corn, 88; oats, 89; flax, 94; pastures, 96; potatoes, 101; apples, 73; grapes, 86.

At corresponding date last year the estimates were as follows: Spring wheat, 82 per cent; corn, 73; oats, 77, flax, 84; pastures, 104; potatoes, 80; apples, 65; grapes, 80.

Compared with the estimates of condition on July 1, 1904, spring wheat shows a decline of 16 points, on account of the serious attack of rust and blight during the latter part of July. The estimates are two points lower on corn and oats as compared with the July rating. As a matter of fact, however, the general outlook of the corn crop is better than it was about the first of July, though it is still relatively about eight to ten days later than usual.

Secretary Greene, of the Iowa Horticultural Society, gives the following report of the fruit crop for August 1, 1904:

Summer apples, 62 per cent; fall apples, 64; winter apples, 54; peaches 10; American plums, 60; domestic plums, 38; Japan plums, 45; grapes, 82. The best crop of apples is grown this year in the eastern part of the State.

# IOWA CROPS—FINAL REPORT, 1904.

## TOTAL YIELD FOR THE STATE—VALUE OF SOIL PRODUCTS AT FARM PRICES DECEMBER FIRST.

Despite somewhat adverse conditions at the outset, and belated growth of the cereal crops, the final report for the season of 1904 makes a satisfactory exhibit of the agricultural resources of the State. The warmth and dryness of the autumn made partial amends for low temperature and slow progress during the summer.

Corn.—The area planted this season was 9,052,450 acres. The loss of acreage from various causes was relatively small compared with recent seasons, and it is probable that practically about nine million acres were harvested. The average yield for the State appears to have been about 36 bushels per acre. The total yield is 323,853,330 bushels, which is 93,342,000 above the yield last year and the largest crop produced since 1900. During the past fifteen years there have been two larger crops; viz.: 345,000,000 bushels in 1900, and 335,000,000 bushels in 1901. This year's output is 62,000,000 bushels above the fifteen year average.

The average price per bushel, at the farms December 1st, was about thirty-five cents; total value of the crops, $113,348,665.

Wheat.—This crop was badly damaged by rust and blight. The area of winter wheat was about 71,030 acres, and the average yield 14.3 bushels per acre; total yield, 1,017,000 bushels. The acreage of spring wheat was 775,040 acres; yield 9.1 bushels per acre; total output for the State, 7,080,430 bushels. Farm prices, winter wheat 92 cents; spring wheat, 86 cents. Total value of wheat crop, $7,024,809.

Oats.—Area seeded, 4,018,980 acres; yield per acre 29.4 bushels; total bushels; 118,435,570. The farm value, 26 cents; total value December 1st, $30,793,284.

Rye.—Area seeded, 99,590 acres; yield per acre, 15 bushels; total yield, 1,517,090 bushels. Value, at 54 cents per bushel, $819,228.

Barley.—Area seeded, 493,370 acres; yield per acre, 25 bushels; total yield, 12,317,710 bushels. Value, at 34 cents per bushel, $4,188,021.

Flax.—Area, 51,370 acres; yield, 11 bushels per acre; total yield, 591,140 bushels Value, at $1.15 per bushel, $679,811.

Potatoes.—Yield per acre, 125 bushels; total output, 14,255,680 bushels. Value, at 28 cents per bushel, $3,991,590.

Hay (tame).—Area harvested, 2,797,640 acres; total yield, 4,499,090 tons. Value, at $5.62 per ton, $25,284,885.

HAY (WILD).—Total amount cut, 1,091,590 tons. Value at $4.50 per ton, $4,912,155.

PASTURAGE AND GRAZING.—The value of pasturage and grazing, harvested by live stock, in pastures and in grain fields, cornfields and meadows after harvest, is placed at $90,000,000, or about $400 per farm of 160 acres. This is believed to be a low estimate.

## TABULATED CROP SUMMARY.

| Crops. | Total Products. | Farm value December 1st. |
|---|---|---|
| Corn | 323,853,330 bushels | $113,348,665 |
| Wheat | 8,097,430 bushels | 7,023,809 |
| Oats | 118,435,570 bushels | 30,793,284 |
| Rye | 1,517,090 bushels | 819,228 |
| Barley | 12,317,710 bushels | 4,188,021 |
| Flax | 591,140 bushels | 679,811 |
| Potatoes | 14,255,680 bushels | 3,991,590 |
| Hay (tame) | 4,499,090 tons | 25,284,885 |
| Hay (wild) | 1,091,590 tons | 4,912,155 |
| Pasturage and grazing (cornfields, etc.) | | 90,000,000 |
| Buckwheat (estimated) | | 250,000 |
| Sweet potatoes | | 350,000 |
| Sorghum and broom corn | | 260,000 |
| Timothy seed | | 950,000 |
| Clover and millet seed | | 175,000 |
| Flax seed | | 679,810 |
| Fruits and garden truck | | 7,500,000 |
| Total soil products | | $291,207,258 |

In this estimate no account is made of the profits derived from the consumption of the staple crops in the dairy and live stock industry.

The average farm value of milch cows is $28, and of horses, $92 per head.

## FINAL CROP REPORT, 1904.

### TOTAL YIELD AND AVERAGE PER ACRE—BY COUNTIES.

| Counties. | Winter Wheat. | | Spring Wheat. | | Corn. | | Oats. | | Rye. | | Barley. | | Flax Seed. | | Potatoes. | | Hay (tame). | | Hay (wild). | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Bushels per acre. | Total bushels. | Bushels per acre. | Total bushels. | Bushels per acre. | Total bushels. | Bushels per acre | Total bushels. | Bushels per acre. | Total bushels. | Bushels per acre. | Total Bushels. | Bushels per acre. | Total bushels. | Bushels per acre. | Total bushels. | Tons per acre. | Total tons | Tons per acre. | Total tons |
| Adair | 15 | 4,050 | 8 | 75,200 | 36 | 3,754,440 | 25 | 774,500 | 18 | 3,060 | 26 | 9,360 | | ...... | 110 | 128,700 | 1.5 | 68,410 | 1.2 | 2,230 |
| Adams | 18 | 18,080 | 12 | 38,640 | 30 | 2,182,500 | 22 | 337,700 | 19 | 8,930 | .. | .......... | | ....... | 100 | 58,000 | 1.7 | 77,530 | 1.0 | 2,140 |
| Allamakee | 9 | 1,080 | 10 | 31,900 | 37 | 1,491,740 | 35 | 1,771,350 | 15 | 18,750 | 26 | 162,500 | 8 | 3,280 | 120 | 130,800 | 1.6 | 62,830 | 1.5 | 3,460 |
| Appanoose | 15 | 18,300 | .... | ........ | 33 | 1,823,250 | 28 | 287,000 | 12 | 21,720 | .... | ........ | .... | ....... | 150 | 162,000 | 1.7 | 71,580 | 1.2 | 1,080 |
| Audubon | | ........ | 6 | 114,960 | 35 | 3,309,950 | 30 | 934,500 | 15 | 310 | 30 | 68,400 | .... | ....... | 90 | 88,200 | 1.5 | 38,790 | 1.0 | 4,130 |
| Benton | .... | ........ | 10 | 15,200 | 33 | 3,969,240 | 30 | 1,918,800 | 15 | 10,650 | 28 | 451,920 | .. | ...... | 140 | 249,200 | 1.2 | 46,930 | 1.0 | 7,210 |
| Black Hawk | .... | ........ | 8 | 3,260 | 37 | 3,596,400 | 29 | 1,522,790 | 15 | 24,750 | 29 | 107,010 | .... | . . | 150 | 207,000 | 1.8 | 72,270 | 1.4 | 12,050 |
| Boone | .... | ........ | 8 | 27,320 | 35 | 3,556,350 | 34 | 1,695,240 | 15 | 5,100 | 30 | 9,300 | .... | ...... | 150 | 175,500 | 2.0 | 42,940 | 1.5 | 22,100 |
| Bremer | .... | ........ | 8 | 3,360 | 36 | 2,198,520 | 35 | 1,817,300 | 18 | 22,860 | 28 | 46,840 | 10 | 7,400 | 130 | 174,200 | 1 5 | 25,890 | 1.5 | 19,140 |
| Buchanan | .... | ........ | 12 | 4,920 | 33 | 2,885,850 | 33 | 1,628,880 | 19 | 9,690 | 32 | 52,240 | 9 | 720 | 130 | 137,800 | 1.5 | 53,770 | 1.2 | 14,240 |
| Buena Vista | .... | ........ | 10 | 72,300 | 31 | 3,389,540 | 32 | 1,959,680 | 16 | 5,020 | 25 | 81,500 | 8 | 4,160 | 110 | 144,100 | 1.5 | 27,850 | 1.3 | 21,200 |
| Butler | .. | ........ | 10 | 3,600 | 32 | 3,592,000 | 28 | 2,039,800 | 17 | 22,270 | 24 | 19,680 | 8 | 3,600 | 160 | 203,200 | 1.7 | 31,600 | 1.2 | 16,920 |
| Calhoun | .... | ..... | 10 | 41,900 | 33 | 3,653,430 | 34 | 2,127,880 | 20 | 4,600 | 27 | 114,120 | .... | ..... | 125 | 132,500 | 1.8 | 29,610 | 1.5 | 19,160 |
| Carroll | .... | ........ | 12 | 196,320 | 41 | 4,599,380 | 32 | 1,555,840 | 20 | 4,800 | 28 | 85,960 | .... | ....... | 130 | 223,600 | 1.6 | 33,930 | 1.5 | 22,680 |
| Cass | 20 | 10,200 | 8 | 174,000 | 35 | 4,068,750 | 30 | 822,300 | 15 | 5,700 | 25 | 24,000 | ... | ....... | 110 | 174,900 | 1.5 | 51,780 | 1.2 | 4,110 |
| Cedar | 20 | 13,400 | 10 | 14,200 | 42 | 4,654,860 | 35 | 1,233,750 | 15 | 22,200 | 28 | 321,480 | .... | ...... | 160 | 193,600 | 1.8 | 70,470 | 1.5 | 1,220 |
| Cerro Gordo | ... | ........ | 9 | 10,536 | 33 | 3,275,910 | 30 | 2,154,300 | 15 | 7,350 | 20 | 41,000 | 7 | 5,670 | 120 | 160,800 | 2.0 | 46,300 | 1.5 | 16,800 |
| Cherokee | .... | ........ | 10 | 193,200 | 40 | 4,502,000 | 35 | 1,756,300 | 14 | 1,260 | 28 | 132,360 | 8 | 960 | 140 | 175,000 | 1.8 | 41,670 | 1.5 | 19,300 |
| Chickasaw | .... | ........ | 12 | 12,960 | 35 | 2,369,050 | 40 | 2,414,800 | 17 | 10,710 | 32 | 80,320 | 12 | 50,160 | 110 | 138,600 | 1.8 | 34,110 | 1.3 | 13,170 |
| Clarke | 20 | 6,400 | . | ...... | 32 | 1,847,040 | 20 | 317,000 | 15 | 7,050 | ... | .......... | .... | ....... | 150 | 81,000 | 1.7 | 77,320 | 1.2 | 600 |
| Clay | .... | ..... | 10 | 52,500 | 33 | 3,118,830 | 37 | 2,007,640 | 15 | 13,650 | 27 | 439,600 | 8 | 2,880 | 120 | 116,400 | 1.6 | 30,570 | 1.4 | 29,700 |
| Clayton | 14 | 17,500 | 12 | 68,760 | 37 | 2,845,670 | 34 | 2,135,540 | 19 | 76,760 | 33 | 195,030 | .. | ....... | 180 | 245,700 | 1.8 | 81,370 | 1.5 | 3,130 |
| Clinton | 20 | 8,400 | 11 | 36,960 | 42 | 4,397,240 | 35 | 1,328,250 | 20 | 46,200 | 30 | 142,500 | .... | ....... | 120 | 140,800 | 1.4 | 61,990 | 1.0 | 4,180 |
| Crawford | .... | ........ | 9 | 363,680 | 36 | 4,348,080 | 34 | 1,428,340 | 18 | 10,620 | 30 | 65,400 | . .. | ..... | 110 | 209,770 | 1.8 | 58,840 | 1.5 | 12,460 |
| Dallas | 12 | 17,160 | 10 | 43,200 | 40 | 4,431,200 | 29 | 934,480 | 17 | 8,160 | 20 | 16,400 | .. | ....... | 115 | 110,400 | 1.6 | 39,450 | 1.5 | 12,690 |
| Davis | 15 | 23,100 | ... | ........ | 35 | 2,043,650 | 28 | 427,000 | 15 | 30,600 | ... | ......... | .. | ....... | 105 | 70,350 | 1.4 | 65,290 | 1.0 | 210 |
| Decatur | 20 | 12,400 | .... | ....... | 32 | 2,245,760 | 20 | 322,200 | 18 | 11,520 | .... | .... ... | .... | ....... | 100 | 67,000 | 1.4 | 76,130 | 1.0 | 890 |
| Delaware | 20 | 24,200 | .... | . | 37 | 3,308,910 | 33 | 1,513,710 | 22 | 40,920 | 30 | 124,500 | .... | ....... | 120 | 139,700 | 1.2 | 44,950 | 1.2 | 6,400 |
| Des Moines | 15 | 45,600 | 8 | 3,680 | 38 | 1,927,260 | 30 | 725,400 | 20 | 15,600 | 28 | 505,680 | .... | ....... | 95 | 102,600 | 1.5 | 30,210 | 1.0 | 1,100 |
| Dickinson | .... | ..... | 9 | 74,970 | 24 | 1,044,240 | 27 | 728,190 | 20 | 6,400 | 25 | 380,250 | 12 | 25,440 | 100 | 52,000 | 2.0 | 15,840 | 1.5 | 27,350 |
| Dubuque | 18 | 1,980 | 15 | 54,300 | 39 | 2,656,490 | 40 | 2,046,400 | 21 | 39,690 | 33 | 80,520 | | . | 130 | 240,900 | 1.5 | 67,680 | 1.4 | 3,820 |
| Emmet | .... | ........ | 12 | 35,160 | 30 | 1,611,600 | 45 | 1,631,700 | 20 | 4,400 | 35 | 287,350 | 11 | 15,070 | 90 | 44,800 | 1.8 | 20,610 | 1.5 | 23,410 |
| Fayette | 20 | 2,600 | 8 | 24,080 | 30 | 2,763,600 | 31 | 2,236,030 | 20 | 19,200 | 33 | 193,380 | 9 | 9,360 | 110 | 180,400 | 1.5 | 71.860 | 1.2 | 8,210 |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Floyd | .... | .... | 9 | 5,220 | 31 | 2,535,490 | 30 | 2,044,200 | 21 | 24,570 | 22 | 103,620 | 8 | 15,440 | 95 | 188,100 | 2.0 | 34,320 | 1.2 | 9,020 |
| Franklin | .... | .... | 13 | 18,860 | 36 | 3,592,440 | 35 | 2,607,850 | 18 | 9,720 | 25 | 26,500 | 9 | 8,280 | 130 | 137,800 | 1.6 | 32,200 | 1.3 | 18,110 |
| Fremont | 12 | 26,760 | 8 | 12,880 | 35 | 3,866,100 | 22 | 244,640 | 15 | 9,150 | ... | .... | . | .... | 150 | 103,500 | 1.8 | 25,390 | 1.5 | 8,560 |
| Greene | .... | .... | 12 | 29,400 | 41 | 3,715,420 | 23 | 964,510 | 15 | 1,800 | 25 | 51,250 | .... | .... | 120 | 90,400 | 1.7 | 30,970 | 1.2 | 14,120 |
| Grundy | .... | .... | 8 | 18,160 | 38 | 3,720,960 | 25 | 1,598,250 | 16 | 1,760 | 24 | 219,120 | .... | .... | 150 | 229,500 | 2.0 | 42,420 | 1.2 | 7,500 |
| Guthrie | 15 | 4,800 | 9 | 60,390 | 33 | 2,711,280 | 30 | 1,116,900 | 20 | 2,800 | 25 | 52,500 | ... | .... | 150 | 85,500 | 1.5 | 43,050 | 1.0 | 7,850 |
| Hamilton | | .... | 15 | 60,300 | 39 | 3,699,930 | 30 | 1,527,300 | 20 | 1,200 | 25 | 24,500 | 12 | 5,400 | 150 | 216,000 | 2.0 | 37,220 | 1.5 | 28,250 |
| Hancock | .... | .... | 8 | 32,160 | 25 | 2,203,000 | 28 | 2,057.440 | 18 | 4,680 | 25 | 62,750 | 9 | 9,540 | 160 | 152,000 | 1.3 | 22,690 | 1.0 | 20,130 |
| Hardin | .... | ..... | 12 | 36,720 | 33 | 3,237,630 | 28 | 1,556,350 | 12 | 2,520 | 26 | 18,980 | .... | .... | 120 | 166,800 | 1.5 | 30,480 | 1.5 | 21,120 |
| Harrison | 20 | 420 | 9 | 280,890 | 38 | 4,955,960 | 33 | 495,550 | 15 | 13,650 | 30 | 31,800 | .... | .... | 110 | 169,400 | 2.0 | 24,570 | 1.8 | 20,130 |
| Henry | 14 | 28,840 | 12 | 480 | 43 | 2,805,750 | 35 | 990,850 | 20 | 70,800 | 25 | 38,250 | .... | .... | 140 | 74,200 | 1.8 | 37,870 | 1.0 | 210 |
| Howard | .... | .... | 12 | 14,280 | 26 | 1,322,760 | 30 | 1,805,100 | 20 | 2,240 | 30 | 105,600 | 12 | 48,960 | 100 | 95,000 | 1.5 | 44,550 | 1.5 | 15,210 |
| Humboldt | .... | .... | 12 | 94,080 | 38 | 2,588,560 | 35 | 1,277,200 | 20 | 2,800 | 33 | 63,030 | 12 | 11,040 | 160 | 73,600 | 1.5 | 22,660 | 1.2 | 18,210 |
| Ida | .. | .... | 10 | 190,100 | 37 | 3.427,68 | 40 | 1,286,000 | 20 | 5,200 | 30 | 123,900 | .. | .... | 100 | 95,000 | 2.0 | 40,420 | 1.5 | 7,210 |
| Iowa | 28 | 5,880 | 13 | 21,840 | 41 | 3,530,920 | 32 | 1,059,840 | 14 | 7,280 | 27 | 106,650 | ... | .... | 150 | 184,500 | 1.5 | 66,120 | 1.5 | 1,900 |
| Jackson | 12 | 3,120 | 10 | 32,200 | 40 | 2,844,800 | 28 | 957,040 | 16 | 33,280 | 25 | 90,250 | .... | .... | 110 | 128,700 | 1.5 | 66,030 | 1.5 | 3,200 |
| Jasper | 10 | 8,200 | 9 | 62,190 | 37 | 4,266,840 | 24 | 991,440 | 22 | 11,660 | 25 | 16,250 | .... | .... | 120 | 241,200 | 1.3 | 44,340 | 1.2 | 2,610 |
| Jefferson | 15 | 29,400 | 12 | 600 | 43 | 2,541,730 | 32 | 726,700 | 16 | 65,120 | 30 | 61,800 | .... | .... | 120 | 70,800 | 1.5 | 45,520 | 1.0 | 2,310 |
| Johnson | 16 | 11,420 | 13 | 13,390 | 42 | 4,448,640 | 31 | 1,317,810 | 16 | 45,920 | 32 | 185,920 | .... | .... | 130 | 170,300 | 1.7 | 62,260 | 1.0 | 1,910 |
| Jones | | .... | 10 | 9,800 | 40 | 3,665,200 | 31 | 1,086,550 | 18 | 31,500 | 30 | 154,200 | .... | .... | 130 | 126,100 | 1.3 | 58,810 | 1.0 | 2,100 |
| Keokuk | 14 | 19,740 | 10 | 9,200 | 37 | 3,570,500 | 27 | 949,050 | 14 | 42,980 | 20 | 91,200 | .... | . | 140 | 120,400 | 1.4 | 55,560 | 1.0 | 470 |
| Kossuth | .... | .... | 12 | 194,160 | 28 | 4,161,360 | 34 | 4,258,500 | 15 | 3,150 | 28 | 177,800 | 12 | 38,640 | 160 | 254,400 | 1.5 | 32,840 | 1.2 | 68,000 |
| Lee | 15 | 96,150 | .... | ..... | 35 | 1,869,350 | 28 | 628,600 | 15 | 72,160 | | .... | .... | .... | 120 | 141,600 | 1.5 | 57,310 | 1.0 | 180 |
| Linn | .... | .... | 10 | 12,100 | 34 | 3,771,280 | 32 | 1,611,520 | 15 | 16,200 | 25 | 23,000 | .... | .... | 110 | 203,500 | 1.5 | 60,420 | 1.0 | 4,110 |
| Louisa | 15 | 33,600 | .... | .... | 40 | 2,407,400 | 33 | 666,930 | 16 | 48,640 | 30 | 46,800 | .... | .... | 90 | 53,100 | 1.6 | 27,360 | 1.2 | 1,520 |
| Lucas | 14 | 8,680 | .... | ..... | 30 | 1,521,300 | 25 | 345,250 | 14 | 8,680 | 22 | 7,480 | .... | .... | 85 | 44,200 | 1.3 | 54,730 | 1.0 | 220 |
| Lyon | | ..... | 8 | 290,600 | 28 | 2,443,560 | 33 | 1,443,850 | 16 | 2,560 | 25 | 1,131,750 | 9 | 1,980 | 120 | 148,800 | 1.5 | 13,660 | 1.5 | 20,550 |
| Madison | 10 | 7,500 | 5 | 20,600 | 40 | 3,178,000 | 25 | 478,750 | 15 | 7,350 | 26 | 39,260 | .... | .... | 150 | 103,500 | 1.8 | 69,150 | 1.5 | 6,150 |
| Mahaska | 15 | 22,800 | 9 | 16,290 | 40 | 4,087,600 | 30 | 964,200 | 15 | 27,150 | 25 | 75,500 | .... | .... | 110 | 100,110 | 1.5 | 51,180 | 1.0 | 910 |
| Marion | 18 | 37,880 | 10 | 30,900 | 39 | 3,642,990 | 30 | 844,800 | 17 | 24,480 | 25 | 20,250 | .... | .... | 120 | 117,700 | 1.5 | 42,150 | 1.2 | 1,530 |
| Marshall | .... | .... | 11 | 55,110 | 42 | 4,630,340 | 33 | 1,707,420 | 15 | 6,450 | 24 | 60,240 | ... | .... | 140 | 161,000 | 1.4 | 39,420 | 1.2 | 2,800 |
| Mills | 12 | 21,600 | 7 | 42,840 | 35 | 2,625,350 | 20 | 229,600 | 10 | 3,200 | .... | .... | .... | .... | 90 | 75,600 | 2.0 | 32,280 | 1.0 | 2,410 |
| Mitchell | .... | .... | 12 | 29,640 | 35 | 2,152,150 | 34 | 2,215,440 | 12 | 6,120 | 28 | 334,880 | 10 | 83,400 | 110 | 191,400 | 1.5 | 36,180 | 1.0 | 2,410 |
| Monona | 21 | 14,900 | 10 | 287,100 | 36 | 4,523,400 | 35 | 632,100 | 16 | 14,560 | 30 | 152,400 | .... | .... | 110 | 134,200 | 1.9 | 8,320 | 1.5 | 27,630 |
| Monroe | 15 | 3,750 | 8 | 960 | 37 | 1,897,560 | 25 | 280,750 | 16 | 13,280 | ... | .... | .... | .... | 100 | 62,000 | 1.5 | 45,310 | 1.0 | 480 |
| Montgomery | 12 | 33,720 | 7 | 102,970 | 35 | 3,363,850 | 22 | 294,800 | 12 | 6,120 | .... | .... | .... | .... | 80 | 72,800 | 1.5 | 48,610 | 1.5 | 2,240 |
| Muscatine | 18 | 28,620 | 12 | 176,520 | 40 | 3,048,400 | 33 | 720,060 | 14 | 70,140 | 28 | 171,360 | .. | .... | 100 | 212,000 | 2.0 | 48,040 | 1.5 | 2,210 |
| O'Brien | | .... | 10 | 147,100 | 30 | 3,307,500 | 33 | 1,757,910 | 15 | 3,300 | 25 | 650,750 | 9 | 2,520 | 110 | 136,400 | 1.5 | 26,860 | 1.5 | 18,030 |
| Osceola | .. | .... | 11 | 101,420 | 30 | 2,440,500 | 34 | 1,115,900 | 15 | 1,650 | 26 | 704,860 | 8 | 5,360 | 120 | 78,000 | 1.7 | 18,920 | 1.5 | 16,410 |
| Page | 15 | 128,550 | 8 | 36,720 | 31 | 3,570,890 | 20 | 325,400 | 12 | 14,400 | 22 | 18,040 | .... | .... | 120 | 108,200 | 1.8 | 61,570 | 1.5 | 4,050 |
| Palo Alto | .. | .... | 10 | 38,100 | 30 | 2,457,300 | 30 | 1,652,700 | 15 | 4,650 | 30 | 156,300 | 9 | 18,090 | 140 | 124.600 | 1.2 | 12,130 | 1.2 | 42,140 |
| Plymouth | .... | .... | 10 | 901,200 | 40 | 6,555,600 | 35 | 1,786,050 | 14 | 5,460 | 25 | 239,250 | 10 | 2,100 | 110 | 212,300 | 1.5 | 26,940 | 1.0 | 26,150 |
| Pocahontas | .... | .... | 12 | 33,720 | 27 | 2,927,070 | 36 | 2,467,440 | 15 | 6,150 | 28 | 87,080 | 10 | 16,200 | 100 | 108,800 | 1.8 | 21,970 | 1.2 | 36,160 |
| Polk | 15 | 13,950 | 10 | 51,110 | 40 | 4,432,800 | 32 | 1,239,040 | 12 | 11,340 | .... | .... | .... | .... | 100 | 192,000 | 1.8 | 38,350 | 1.2 | 10,670 |
| Pottawattamie | 15 | 13,050 | 8 | 305,520 | 40 | 8,051,200 | 32 | 963,840 | 12 | 6,120 | 20 | 16,600 | .... | .... | 120 | 312,200 | 1.6 | 53,580 | 1.0 | 13.260 |
| Poweshiek | 13 | 910 | 12 | 27,120 | 40 | 4,352,800 | 30 | 1,203,300 | 15 | 5,850 | 25 | 86,250 | .... | .... | 140 | 149,800 | 1.4 | 58,950 | 1.0 | 650 |
| Ringgold | 13 | 9,360 | 10 | 850 | 25 | 1,982,000 | 20 | 416,400 | 15 | 9,300 | .... | .... | | .... | 100 | 51,000 | 1.5 | 78,280 | 1.2 | 910 |
| Sac | | .... | 12 | 94,080 | 34 | 4,094,280 | 35 | 1,756,300 | 20 | 2,800 | 30 | 143,100 | 12 | 960 | 150 | 160,500 | 1.7 | 42,680 | 1.5 | 21,910 |
| Scott | 17 | 35,020 | 14 | 85,680 | 43 | 3,350,130 | 30 | 641,700 | 15 | 27,150 | 22 | 518,760 | . | .... | 150 | 721,500 | 1.4 | 36,690 | 1.2 | 6,330 |
| Shelby | .... | .... | 10 | 30,120 | 40 | 4,808,400 | 30 | 818,400 | 15 | 1,350 | 25 | 34,500 | 10 | 3,100 | 140 | 193,200 | 1.5 | 31,810 | 1.5 | 6,240 |

## FINAL CROP REPORT—CONTINUED.

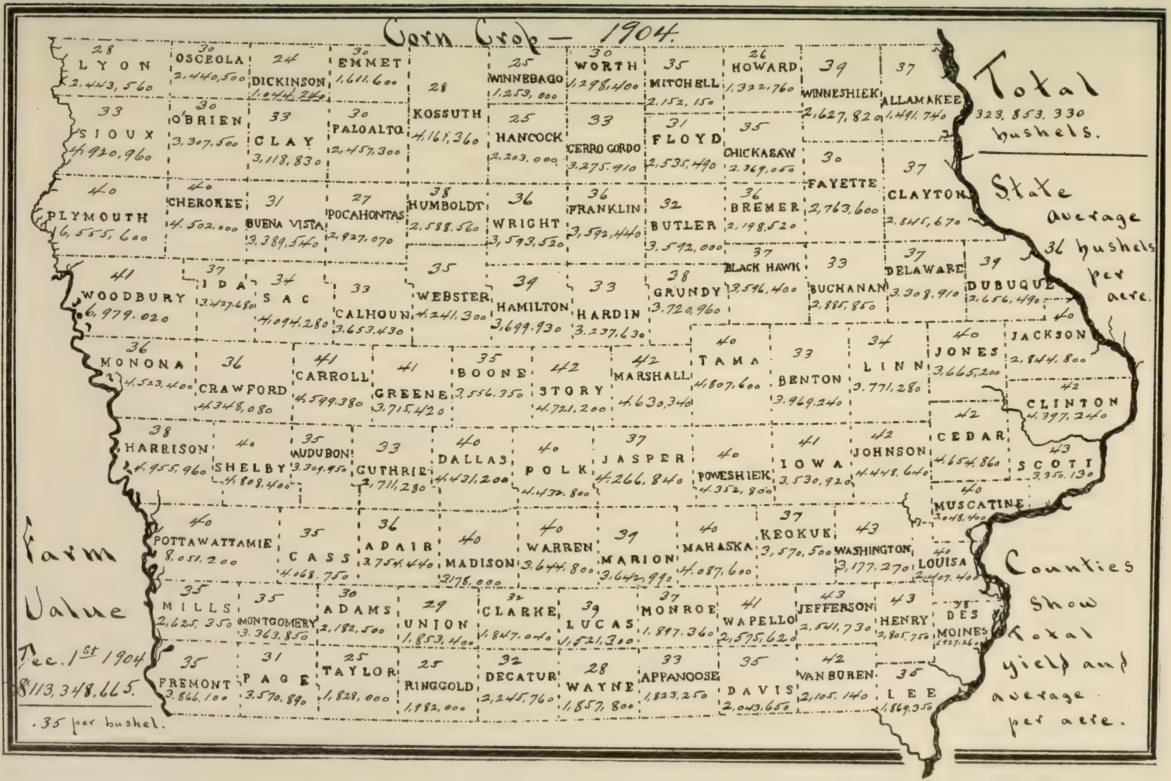
| Counties. | Winter Wheat. | | Spring Wheat. | | Corn. | | Oats. | | Rye. | | Barley. | | Flax Seed. | | Potatoes. | | Hay (tame). | | Hay (wild). | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Bushels per acre. | Total bushels. | Bushels per acre. | Total bushels. | Bushels per acre. | Total bushels. | Bushels per acre. | Total bushels. | Bushels per acre. | Total bushels. | Bushels per acre. | Total bushels. | Bushels per acre. | Total bushels. | Bushels per acre. | Total bushels | Tons per acre. | Total tons. | Tons per acre. | Total tons. |
| Sioux | .... | ........ | 7 | 421,260 | 33 | 4,920,960 | 35 | 1,754,200 | .... | ........ | 30 | 864,300 | 8 | 3,280 | 120 | 169,200 | 1.5 | 15,610 | 1.5 | 30,910 |
| Story | 20 | 1,800 | 10 | 17,400 | 42 | 4,721,200 | 32 | 1,645,120 | 20 | 9,800 | 30 | 15,300 | .... | ....... | 150 | 123,000 | 1.5 | 33,780 | 1.0 | 18,380 |
| Tama | 20 | 800 | 8 | 50,480 | 40 | 4,807,600 | 33 | 1,719,630 | 15 | 6,150 | 25 | 720,250 | .... | ....... | 140 | 245,000 | 1.5 | 60,270 | 1.0 | 5,240 |
| Taylor | 15 | 47,400 | 5 | 400 | 25 | 1,828,000 | 15 | 252,200 | 12 | 14,850 | 20 | 13,400 | ... | ....... | 120 | 78,000 | 2.0 | 68,220 | 1.5 | 2,100 |
| Union | 15 | 2,700 | 8 | 720 | 29 | 1,853,400 | 23 | 408,760 | 16 | 2,720 | 20 | 10,200 | .... | ....... | 120 | 97,200 | 1.7 | 74,250 | 1.0 | 1,290 |
| Van Buren | 13 | 28,860 | | ..... | 42 | 2,105,140 | 30 | 517,200 | 12 | 45,960 | .... | .......... | .... | ....... | 150 | 63,000 | 1.8 | 65,010 | 1.0 | 1,520 |
| Wapello | 15 | 31,050 | 10 | 1,100 | 41 | 2,575,620 | 40 | 647,200 | 20 | 83,200 | 25 | 39,500 | .... | ....... | 100 | 92,000 | 1.5 | 48,420 | 1.0 | 210 |
| Warren | 16 | 9,760 | 10 | 30,800 | 40 | 3,644,800 | 26 | 1,532,520 | 15 | 18,900 | 20 | 26,600 | .... | ....... | 140 | 113,400 | 1.7 | 69,730 | 1.2 | 420 |
| Washington | 20 | 18,400 | 10 | 2,800 | 43 | 3,177,270 | 30 | 978,300 | 15 | 42,150 | 21 | 84,210 | .... | ....... | 130 | 89,700 | 1.8 | 47,280 | 1.0 | 240 |
| Wayne | 20 | 1,800 | .... | ..... | 28 | 1,857,800 | 22 | 336,380 | 15 | 12,300 | .... | .......... | .... | ...... | 130 | 72,800 | 1.7 | 100,980 | 1.0 | 460 |
| Webster | | ........ | 12 | 61,400 | 35 | 4,241,300 | 40 | 3,021,200 | 20 | 3,600 | 22 | 21,100 | 10 | 8,100 | 120 | 135,600 | 2.0 | 38,440 | 1.0 | 24,110 |
| Winnebago | .... | ......... | 8 | 66,000 | 25 | 1,253,000 | 28 | 1,125,880 | | .......... | 25 | 81,000 | 6 | 11,340 | 105 | 64,050 | 1.5 | 18,150 | 1.2 | 26,110 |
| Winneshiek | 15 | 1,350 | 7 | 42,840 | 39 | 2,627,820 | 33 | 2,276,670 | 20 | 5,200 | 30 | 307,800 | 10 | 73,100 | 110 | 129,800 | 1.3 | 58,860 | 1.0 | 11,200 |
| Woodbury | .... | ......... | 9 | 379,620 | 41 | 6,979,020 | 35 | 996,450 | 12 | 7,920 | 30 | 197,700 | 7 | 1,470 | 120 | 177,600 | 2.0 | 22,180 | 1.2 | 14,120 |
| Worth | .... | ......... | 10 | 30,200 | 30 | 1,298,400 | 40 | 2,287,600 | 15 | 1,650 | 35 | 192,850 | 12 | 75,480 | 150 | 111,000 | 1.8 | 28,990 | 1.0 | 14,240 |
| Wright | . | ......... | 14 | 68,180 | 36 | 3,593,520 | 33 | 2,274,030 | 15 | 1,800 | 20 | 30,600 | 11 | 18,260 | 110 | 92,400 | 1.9 | 35,910 | 1.5 | 28,160 |
| Totals, state | .. | 1,017,000 | .... | 7,080,430 | .... | 323,853,330 | .... | 118,435,570 | .... | 1,517,090 | .... | 12,317,710 | .... | 591,140 | .... | 14,255,680 | .... | 4,099,090 | .... | 1,091,590 |
| Av. per acre | 14.3 | ....... | 9.1 | .... | 36 | ......... | 29.4 | ...... | 15 | . | 25 | .... | 11 | ....... | 115 | ......... | 1.5 | ......... | 1.2 | ....... |

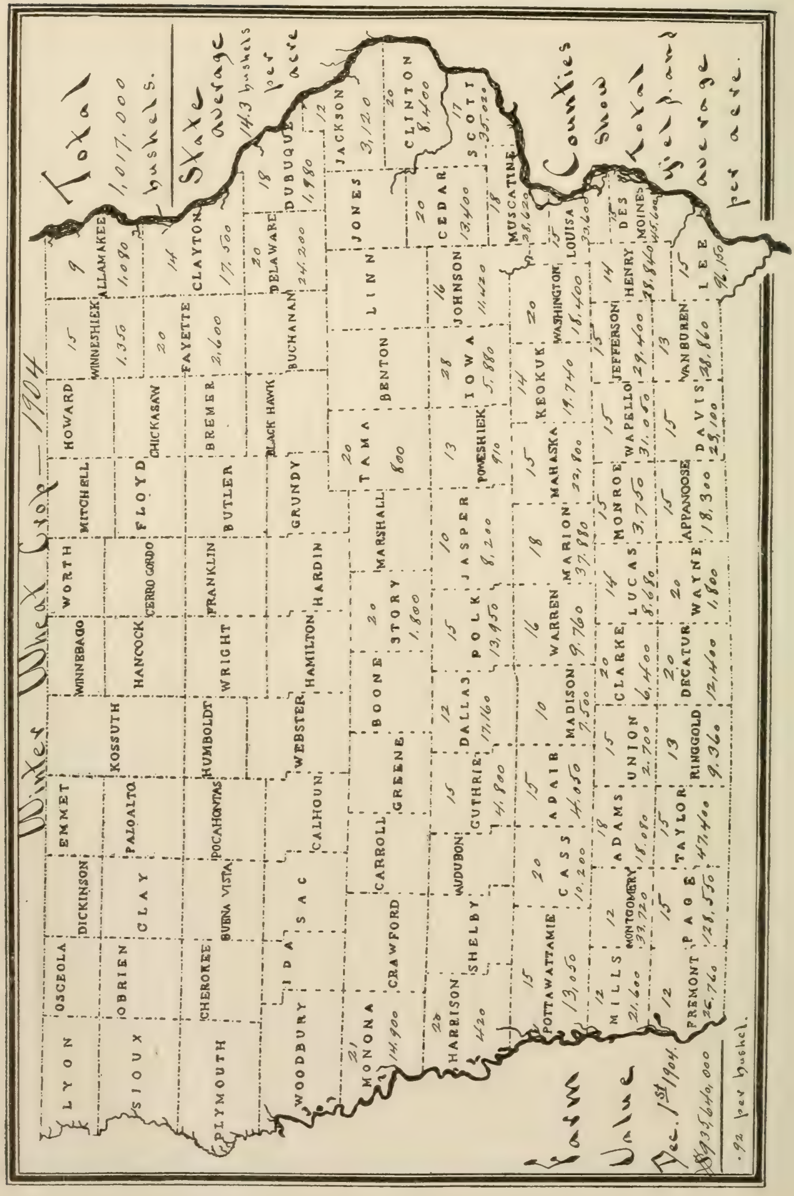
## IOWA CROPS, 1904—NUMBER OF ACRES BY COUNTIES.

| Counties. | Winter wheat, acres. | Spring wheat, acres. | Corn, acres. | Oats, acres. | Rye, acres. | Barley, acres. | Flax, acres. | Potatoes, acres. | Meadows, acres. |
|---|---|---|---|---|---|---|---|---|---|
| Adair | 270 | 9,490 | 104,290 | 30,980 | 170 | 360 | .... | 1,170 | 45,610 |
| Adams | 1,060 | 3,220 | 72,750 | 15,350 | 470 | 1,210 | ........ | 580 | 27,920 |
| Allamakee | 620 | 3,190 | 40,320 | 50,610 | 1,250 | 6,250 | 410 | 1,090 | 39,270 |
| Appanoose | 1,220 | ........ | 55,250 | 10,250 | 1,810 | ........ | ........ | 1,080 | 42,110 |
| Audubon | ........ | 19,160 | 94,570 | 31,150 | 210 | 2,280 | ........ | 980 | 25,860 |
| Benton | ........ | 2,030 | 126,480 | 63,960 | 710 | 16,140 | ........ | 1,780 | 39,110 |
| Black Hawk | ........ | 420 | 97,200 | 52,510 | 1,650 | 3,690 | ........ | 1,380 | 40,150 |
| Boone | ........ | 3,290 | 103,640 | 49,860 | 340 | 310 | ........ | 1,170 | 21,470 |
| Bremer | ........ | 420 | 61,070 | 54,780 | 1,270 | 1,680 | 740 | 1,340 | 17,260 |
| Buchanan | ........ | 410 | 87,450 | 49,360 | 510 | 1,570 | 80 | 1,060 | 35,850 |
| Buena Vista | ........ | 7,280 | 109,340 | 61,240 | 320 | 3,260 | 520 | 1,310 | 18,570 |
| Butler | ........ | 360 | 112,250 | 72,850 | 1,310 | 820 | 450 | 1,270 | 18,590 |
| Calhoun | ........ | 4,190 | 110,710 | 62,820 | 230 | 4,260 | 860 | 1,060 | 16,450 |
| Carroll | ........ | 16,360 | 112,180 | 48,620 | 240 | 3,070 | 190 | 1,720 | 21,210 |
| Cass | 510 | 21,750 | 116,250 | 27,410 | 380 | 960 | ........ | 1,590 | 34,520 |
| Cedar | 670 | 1,420 | 110,830 | 35,250 | 1,480 | 10,410 | ........ | 1,210 | 39,150 |
| Cerro Gordo | .... | 1,170 | 99,270 | 71,810 | 490 | 2,050 | 810 | 1,340 | 23,150 |
| Cherokee | ........ | 19,320 | 112,550 | 50,180 | 90 | 4,370 | 120 | 1,250 | 22,890 |
| Chickasaw | ........ | 1,080 | 64,830 | 60,370 | 630 | 2,511 | 4,180 | 1,260 | 24,510 |
| Clarke | 320 | ........ | 57,720 | 15,850 | 470 | 120 | .... | 540 | 45,720 |
| Clay | ........ | 5,250 | 94,510 | 54,260 | 910 | 14,800 | 460 | 970 | 19,110 |
| Clayton | 1,250 | 5,730 | 76,910 | 62,810 | 4,040 | 5,910 | ........ | 1,890 | 45,210 |
| Clinton | 420 | 3,360 | 108,720 | 37,950 | 2,310 | 4,750 | ........ | 1,190 | 44,280 |
| Crawford | ........ | 40,420 | 140,780 | 42,010 | 590 | 2,180 | ........ | 1,970 | 32,810 |
| Dallas | 1,430 | 4,320 | 112,780 | 39,120 | 480 | 820 | ........ | 960 | 24,660 |
| Davis | 1,540 | ........ | 58,390 | 15,250 | 3,040 | ........ | ........ | 540 | 46,640 |
| Decatur | 620 | ........ | 70,180 | 16,110 | 640 | ........ | ........ | 670 | 54,380 |
| Delaware | 1,210 | ........ | 89,430 | 45,870 | 1,860 | 4,150 | ........ | 1,160 | 37,490 |
| Des Moines | 3,040 | 460 | 50,720 | 24,180 | 780 | 18,060 | ........ | 810 | 19,120 |
| Dickinson | ........ | 8,310 | 43,510 | 26,970 | 320 | ........ | 2,120 | 520 | 7,920 |
| Dubuque | 110 | 3,620 | 68,110 | 51,250 | 1,890 | 2,440 | ........ | 1,930 | 45,120 |
| Emmet | ........ | 2,930 | 53,720 | 36,260 | 220 | 8,210 | 1,370 | 490 | 11,450 |
| Fayette | 130 | 3,010 | 92,120 | 72,130 | 960 | 5,860 | 1,860 | 1,640 | 47,910 |
| Floyd | ........ | 580 | 84,790 | 68,140 | 1,170 | 4,710 | 1,930 | 1,980 | 17,160 |
| Franklin | ........ | 1,690 | 99,790 | 74,510 | 540 | 1,060 | 920 | 1,060 | 20,130 |
| Fremont | 4,530 | 2,510 | 115,460 | 11,120 | 610 | ........ | ........ | 690 | 14,110 |
| Greene | ........ | 2,450 | 90,620 | 42,370 | 120 | 2,500 | ........ | 670 | 18,220 |
| Grundy | ........ | 2,270 | 97,920 | 63,930 | 110 | 9,130 | ........ | 1,530 | 21,210 |
| Guthrie | 320 | 8,610 | 82,160 | 37,230 | 140 | 1,050 | ........ | 570 | 28,700 |
| Hamilton | ........ | 4,020 | 94,870 | 50,910 | 60 | 980 | 650 | 1,440 | 18,610 |
| Hancock | ........ | 4,810 | 88,120 | 73,480 | 260 | 2,510 | 1,060 | 950 | 17,460 |
| Hardin | ........ | 3,060 | 98,110 | 55,620 | 210 | 730 | 110 | 1,390 | 20,320 |
| Harrison | 210 | 31,210 | 130,420 | 15,350 | 910 | 1,060 | ........ | 1,540 | 12,230 |
| Henry | 2,060 | ........ | 65,250 | 28,110 | 3,540 | 1,530 | ........ | 560 | 21,040 |
| Howard | 90 | 1,080 | 51,260 | 60,170 | 120 | 3,520 | 4,080 | 950 | 29,700 |
| Humboldt | ........ | 7,090 | 68,120 | 36,520 | 140 | 1,910 | 920 | 460 | 15,110 |
| Ida | ........ | 19,010 | 92,640 | 32,150 | 260 | 4,130 | ........ | 950 | 20,210 |
| Iowa | 210 | 1,680 | 86,120 | 33,120 | 520 | 3,950 | ........ | 1,230 | 44,088 |
| Jackson | 260 | 3,220 | 71,120 | 34,180 | 2,080 | 3,610 | ........ | 1,170 | 44,022 |
| Jasper | 820 | 6,910 | 116,320 | 41,310 | 1,030 | 650 | ........ | 2,010 | 34,111 |
| Jefferson | 1,960 | 50 | 59,110 | 22,710 | 4,070 | 2,060 | ........ | 510 | 30,350 |
| Johnson | 720 | 1,030 | 105,920 | 42,510 | 2,870 | 5,810 | ........ | 1,310 | 41,510 |
| Jones | .. | 980 | 91,630 | 35,050 | 1,750 | 5,140 | ........ | 950 | 45,210 |
| Keokuk | 1,410 | 920 | 96,590 | 35,150 | 3,070 | 4,560 | ........ | 860 | 39,690 |
| Kossuth | ........ | 16,180 | 148,620 | 125,250 | 210 | 6,350 | 3,220 | 1,590 | 23,100 |
| Lee | 6,410 | ........ | 53,410 | 22,450 | 4,810 | ........ | ........ | 1,180 | 38,200 |
| Linn | ........ | 1,810 | 111,920 | 50,360 | 1,080 | 920 | ........ | 1,850 | 40,00 |

## IOWA CROPS, 1904—CONTINUED.

| Counties. | Winter wheat, acres. | Spring wheat, acres. | Corn, acres. | Oats, acres. | Rye, acres. | Barley, acres. | Flax, acres. | Potatoes, acres. | Meadows, acres. |
|---|---|---|---|---|---|---|---|---|---|
| Louisa ........ | 2,240 | 80 | 60,180 | 20,210 | 3,040 | 1,560 | ........ | 510 | 17,100 |
| Lucas ......... | 620 | 40 | 50,710 | 13,810 | ........ | 1,300 | ........ | 480 | 42,100 |
| Lyon .......... | .... | 36,950 | 87,270 | 43,450 | 160 | 45,270 | 220 | 1,240 | 9,110 |
| Madison ...... | 750 | 4,120 | 79,450 | 19,150 | 490 | 1,510 | ........ | 690 | 38,420 |
| Mahaska .... | 1,520 | 1,810 | 102,190 | 32,140 | 1,810 | 3,020 | ........ | 910 | 34,120 |
| Marion ........ | 2,160 | 3,090 | 98,410 | 28,160 | 1,440 | 810 | ........ | 850 | 28,100 |
| Marshall ..... | ........ | 5,010 | 110,270 | 51,740 | 430 | 2,510 | ........ | 1,150 | 28,160 |
| Mills .......... | 1,860 | 6,120 | 75,010 | 11,480 | 320 | 420 | ........ | 840 | 16,140 |
| Mitchell ...... | ........ | 2,470 | 61,410 | 65,160 | 510 | 11,960 | ........ | 1,749 | 24,120 |
| Monona ..... | 710 | 28,710 | 125,650 | 18,060 | 910 | 5,080 | 410 | 1,220 | 4,380 |
| Monroe ....... | 250 | 120 | 50,280 | 11,230 | 820 | 180 | ........ | 620 | 30,210 |
| Montgomery . | 2,810 | 14,710 | 96,110 | 13,400 | 510 | 320 | ........ | 710 | 32,410 |
| Muscatine .... | 1,590 | 1,610 | 76,200 | 21,820 | 5,010 | 6,120 | ........ | 2,120 | 24,020 |
| O'Brien ...... | ........ | 14,710 | 110,250 | 53,270 | 220 | 26,030 | 280 | 1,240 | 17,910 |
| Osceola ....... | ........ | 9,220 | 61,350 | 32,850 | 110 | 27,110 | 670 | 650 | 11,190 |
| Page .......... | 8,570 | 4,590 | 115,190 | 16,270 | 1,200 | 1,020 | ........ | 910 | 34,210 |
| Palo Alto ..... | ........ | 3,810 | 81,910 | 55,090 | 310 | 5,210 | 2,010 | 890 | 10,110 |
| Plymouth. .... | ........ | 90,120 | 163,890 | 51,030 | 390 | 9,570 | 210 | 1,930 | 17,960 |
| Pocahontas ... | ........ | 2,810 | 103,410 | 68,540 | 410 | 3,110 | 1,620 | 1,080 | 12,210 |
| Polk ...... | 930 | 5,110 | 110,820 | 38,720 | 920 | ........ | ........ | 1,920 | 21,310 |
| Pottawatt'mie | 870 | 38,190 | 201,280 | 30,120 | 510 | 830 | ........ | 2,610 | 33,490 |
| Poweshiek.... | 70 | 2,260 | 108,820 | 40,110 | 390 | 3,450 | ........ | 1,070 | 42,110 |
| Ringgold .... | 720 | ........ | 79,280 | 20,820 | 620 | ........ | ........ | 510 | 52,190 |
| Sac . .......... | ........ | 7,840 | 120,420 | 50,180 | 140 | 4,770 | ........ | 1,070 | 25,110 |
| Scott .......... | 2,060 | 6,120 | 77,910 | 21,390 | 1,810 | 23,580 | ........ | 4,810 | 26,210 |
| Shelby ........ | ........ | 30,120 | 120,210 | 27,280 | 90 | 28,520 | 310 | 1,380 | 11,210 |
| Sioux . .... | ........ | 60,180 | 149,120 | 50,120 | ........ | 28,810 | 410 | 1,410 | 10,410 |
| Story ......... | 90 | 1,740 | 112,410 | 51,410 | 490 | 510 | ........ | 820 | 22,520 |
| Tama ......... | 40 | 6,310 | 120,190 | 52,110 | 410 | 16,680 | ........ | 1,750 | 40,180 |
| Taylor ........ | 3,160 | 80 | 73,120 | 16,820 | 990 | 670 | ........ | 650 | 34,110 |
| Union ........ | 180 | 90 | 65,980 | 18,120 | 170 | 510 | ........ | 810 | 43,680 |
| Van Buren ... | 2,220 | ........ | 50,126 | 17,240 | 3,830 | ........ | ........ | 420 | 36,150 |
| Wapello ...... | 2,070 | 110 | 62,820 | 16,180 | 4,160 | 1,580 | ........ | 920 | 32,280 |
| Warren ...... | 610 | 3,080 | 91,120 | 23,220 | 1,260 | 1,330 | ........ | 810 | 41,020 |
| Washington .. | 920 | 280 | 73,890 | 32,610 | 2,810 | 4,010 | ........ | 690 | 26,280 |
| Wayne ....... | 90 | ........ | 66,350 | 15,290 | 820 | ........ | ........ | 460 | 59,400 |
| Webster ...... | ........ | 5,850 | 121,180 | 75,530 | 180 | 960 | 810 | 1,130 | 19,220 |
| Winnebago... | ........ | 8,250 | 50,120 | 40,210 | ........ | 1,240 | 1,890 | 610 | 12,100 |
| Winneshiek .. | 90 | 6,120 | 67,380 | 68,990 | 260 | 10,260 | 7,310 | 1,180 | 45,280 |
| Woodbury .... | 410 | 42,180 | 170,220 | 28,470 | 660 | 6,590 | 210 | 1,480 | 11,090 |
| Worth ....... | ........ | 3,020 | 43,280 | 57,190 | 110 | 5,510 | 6,290 | 740 | 16,110 |
| Wright........ | ........ | 4,870 | 99,820 | 68,910 | 120 | 1,530 | 1,660 | 840 | 18,990 |
| Total State. | 71,030 | 775,040 | 9,052,450 | 4,018,980 | 99,590 | 493,370 | 51,370 | 113,250 | 2,797,640 |


Corn Crop — 1904.
Total
323,853,330
bushels.
State
average
36 bushels
per
acre.
Counties
Show
Total
yield and
average
per acre.
Farm
Value
Dec. 1st 1904
$113,348,665.
.35 per bushel.
28 LYON 2,443,560
30 OSCEOLA 2,440,500
24 DICKINSON 1,044,240
30 EMMET 1,611,600
28 KOSSUTH 4,161,360
25 WINNEBAGO 1,253,000
30 WORTH 1,298,400
35 MITCHELL 2,152,150
26 HOWARD 1,322,760
39 WINNESHIEK 2,627,820
37 ALLAMAKEE 1,491,740
33 SIOUX 4,920,960
30 O'BRIEN 3,307,500
33 CLAY 3,118,830
30 PALOALTO 2,457,300
25 HANCOCK 2,203,000
33 CERRO GORDO 3,275,910
31 FLOYD 2,535,490
35 CHICKASAW 2,369,050
30 FAYETTE 2,763,600
37 CLAYTON 2,845,670
40 PLYMOUTH 6,555,600
40 CHEROKEE 4,502,000
31 BUENA VISTA 3,389,540
27 POCAHONTAS 2,927,070
38 HUMBOLDT 2,588,560
36 WRIGHT 3,593,520
36 FRANKLIN 3,592,440
32 BUTLER 3,592,000
36 BREMER 2,198,520
37 BLACK HAWK 3,596,400
33 BUCHANAN 2,885,850
37 DELAWARE 3,308,910
39 DUBUQUE 2,656,490
41 WOODBURY 6,979,020
37 IDA 3,427,680
34 SAC 4,094,280
33 CALHOUN 3,653,430
35 WEBSTER 4,241,300
39 HAMILTON 3,699,930
33 HARDIN 3,237,630
38 GRUNDY 3,720,960
40 JACKSON 2,844,800
36 MONONA 4,523,400
36 CRAWFORD 4,348,080
41 CARROLL 4,599,380
41 GREENE 3,715,420
35 BOONE 3,556,350
42 STORY 4,721,200
42 MARSHALL 4,630,340
40 TAMA 4,807,600
33 BENTON 3,969,240
34 LINN 3,771,280
40 JONES 3,665,200
42 CLINTON 4,397,240
38 HARRISON 4,955,960
40 SHELBY 4,808,400
35 AUDUBON 3,309,950
33 GUTHRIE 2,711,280
40 DALLAS 4,431,200
40 POLK 4,432,800
37 JASPER 4,266,840
40 POWESHIEK 4,352,800
41 IOWA 3,530,920
42 JOHNSON 4,448,640
42 CEDAR 4,654,860
43 SCOTT 3,950,130
40 MUSCATINE 3,048,400
40 POTTAWATTAMIE 8,051,200
35 CASS 4,068,750
36 ADAIR 3,754,440
40 MADISON 3,178,000
40 WARREN 3,644,800
39 MARION 3,642,990
40 MAHASKA 4,087,600
37 KEOKUK 3,570,500
43 WASHINGTON 3,177,270
40 LOUISA 2,407,400
35 MILLS 2,625,350
35 MONTGOMERY 3,363,850
30 ADAMS 2,182,500
29 UNION 1,853,400
32 CLARKE 1,847,040
39 LUCAS 1,521,300
37 MONROE 1,897,360
41 WAPELLO 2,575,620
43 JEFFERSON 2,541,730
43 HENRY 2,805,750
38 DES MOINES 1,927,260
35 FREMONT 3,866,100
31 PAGE 3,570,890
25 TAYLOR 1,828,000
25 RINGGOLD 1,982,000
32 DECATUR 2,245,760
28 WAYNE 1,857,800
33 APPANOOSE 1,823,250
35 DAVIS 2,043,650
42 VAN BUREN 2,105,140
35 LEE 1,869,350



Winter Wheat Crop—1904

Total 1,017,000 bushels.

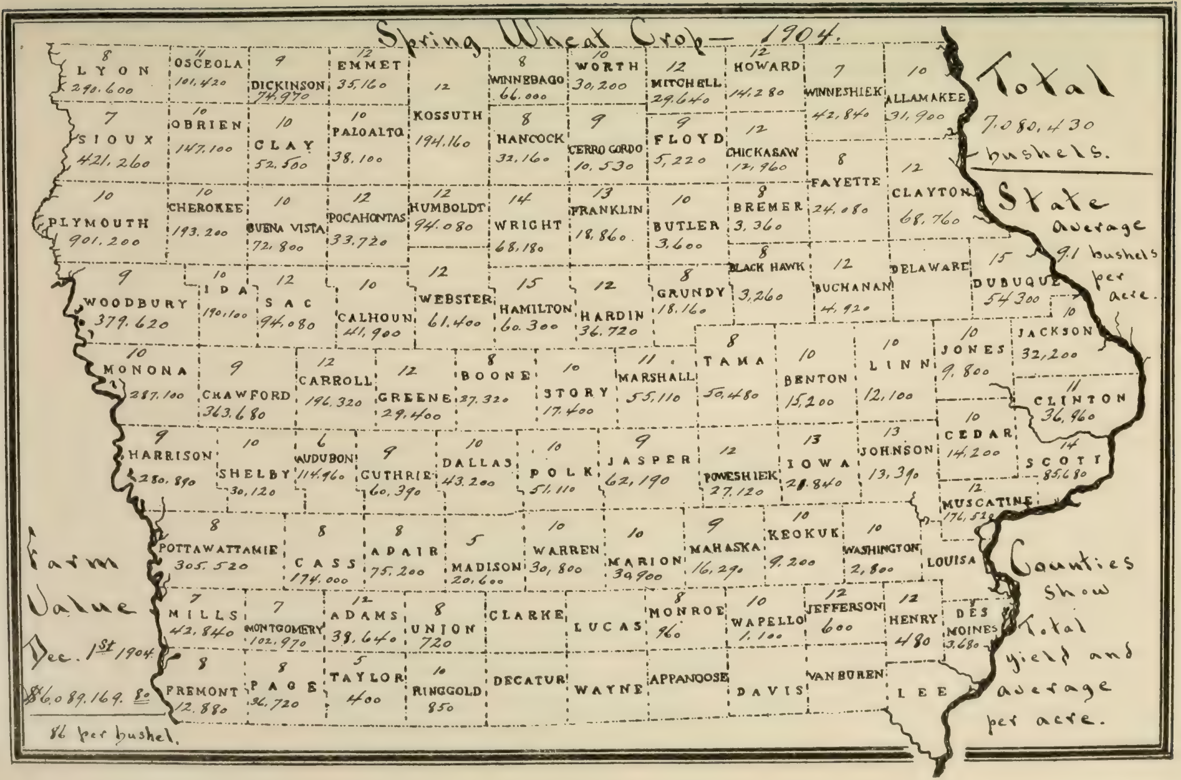
State average 14.3 bushels per acre

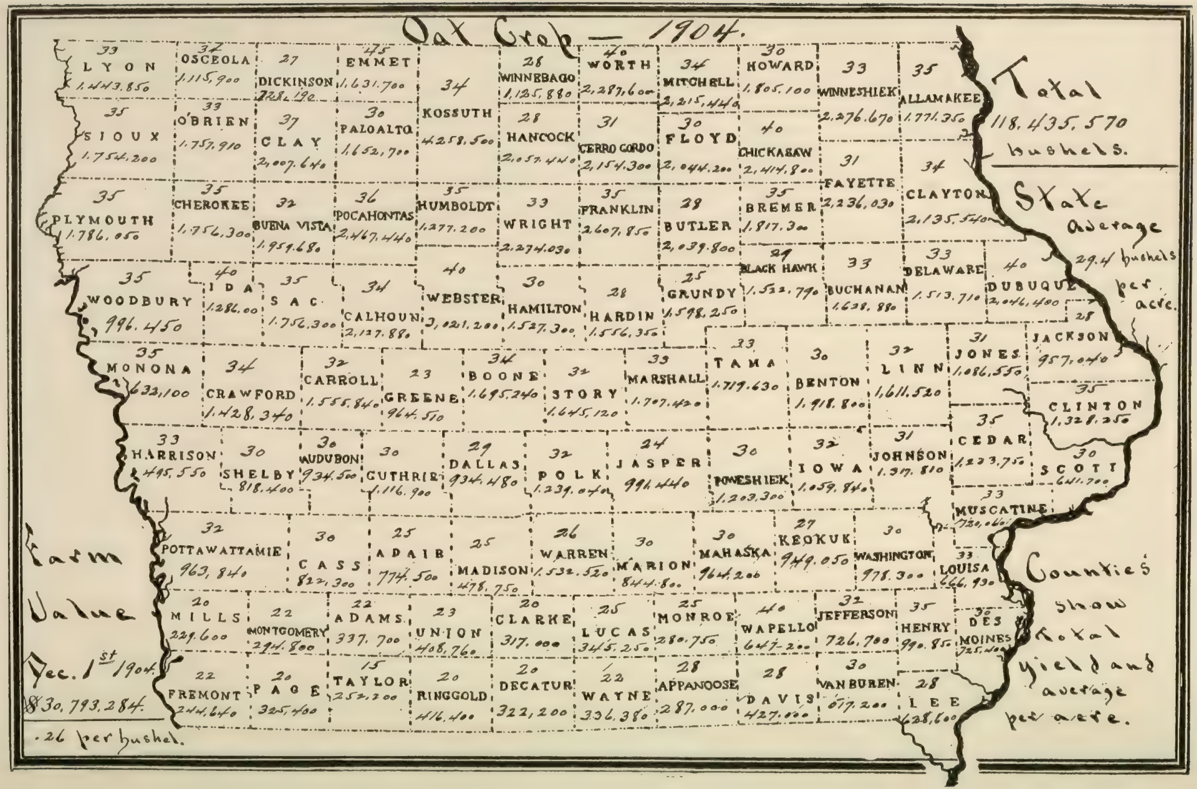
Counties show total yield and average per acre.

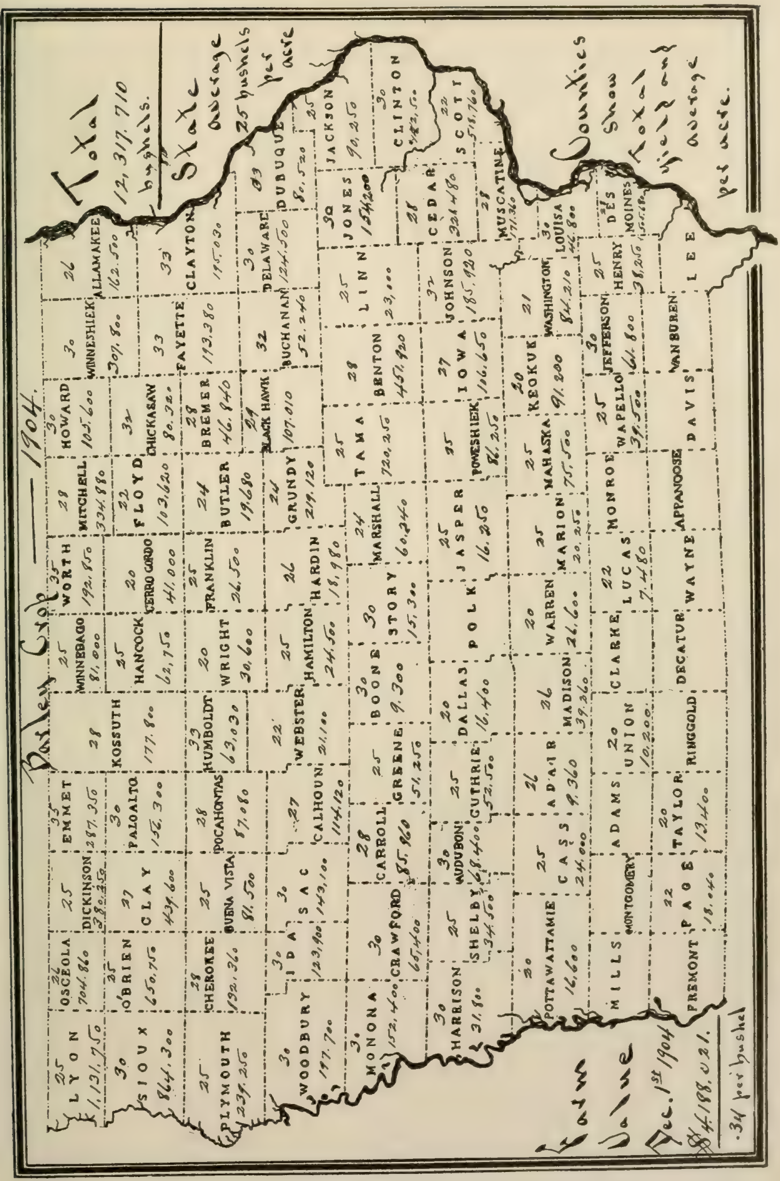
Farm Value Dec. 1st 1904. $935,640,000

.92 per bushel.

LYON
OSCEOLA
DICKINSON
EMMET
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK 15 1,350
ALLAMAKEE 9 1,090
SIOUX
OBRIEN
CLAY
PALOALTO
KOSSUTH
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE 20 2,600
CLAYTON 14 17,500
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
BLACK HAWK
BUCHANAN
DELAWARE 20 24,200
DUBUQUE 18 1,980
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
TAMA 20 800
BENTON
LINN
JONES
JACKSON 12 3,120
CLINTON 20 8,400
MONONA 21 14,900
CRAWFORD
CARROLL
GREENE
BOONE
STORY 20 1,800
MARSHALL
JASPER 10 8,200
POWESHIEK 13 910
IOWA 28 5,880
JOHNSON 16 11,420
CEDAR 20 13,400
SCOTT 17 35,020
HARRISON 28 420
SHELBY
AUDUBON
GUTHRIE 15 4,800
DALLAS 12 17,160
POLK 15 13,950
MUSCATINE 18 38,620
POTTAWATTAMIE 15 13,050
CASS 20 10,200
ADAIR 15 4,050
MADISON 10 7,500
WARREN 16 9,760
MARION 18 37,880
MAHASKA 15 22,800
KEOKUK 14 19,740
WASHINGTON 20 18,400
LOUISA 15 33,600
MILLS 12 21,600
MONTGOMERY 12 33,720
ADAMS 18 18,090
UNION 15 2,700
CLARKE 20 6,400
LUCAS 14 8,680
MONROE 15 3,750
WAPELLO 15 31,050
JEFFERSON 15 29,400
HENRY 14 28,840
DES MOINES 15 45,600
FREMONT 12 26,760
PAGE 15 128,550
TAYLOR 15 47,400
RINGGOLD 13 9,360
DECATUR 20 12,400
WAYNE 20 1,800
APPANOOSE 15 18,300
DAVIS 15 25,100
VAN BUREN 13 28,860
LEE 15 91,150


Spring Wheat Crop— 1904.
Total 7,080,430 bushels.
State average 9.1 bushels per acre.
Counties show Total yield and average per acre.
Farm Value Dec. 1st 1904 $6,089,169.80
86 per bushel.
8 LYON 290,600
11 OSCEOLA 101,420
9 DICKINSON 74,970
12 EMMET 35,160
12 KOSSUTH 194,160
8 WINNEBAGO 66,000
10 WORTH 30,200
12 MITCHELL 29,640
12 HOWARD 14,280
7 WINNESHIEK 42,840
10 ALLAMAKEE 31,900
7 SIOUX 421,260
10 OBRIEN 147,100
10 CLAY 52,500
10 PALOALTO 38,100
8 HANCOCK 32,160
9 CERRO GORDO 10,530
9 FLOYD 5,220
12 CHICKASAW 12,960
8 FAYETTE 24,080
12 CLAYTON 68,760
10 PLYMOUTH 901,200
10 CHEROKEE 193,200
10 BUENA VISTA 72,800
12 POCAHONTAS 33,720
12 HUMBOLDT 94,080
14 WRIGHT 68,180
13 FRANKLIN 18,860
10 BUTLER 3,600
8 BREMER 3,360
8 BLACK HAWK 3,260
12 BUCHANAN 4,920
DELAWARE
15 DUBUQUE 54300
9 WOODBURY 379,620
10 IDA 190,100
12 SAC 94,080
10 CALHOUN 41,900
12 WEBSTER 61,400
15 HAMILTON 60,300
12 HARDIN 36,720
8 GRUNDY 18,160
8 TAMA 50,480
10 BENTON 15,200
10 LINN 12,100
10 JONES 9,800
10 JACKSON 32,200
10 MONONA 287,100
9 CRAWFORD 363,680
12 CARROLL 196,320
12 GREENE 29,400
8 BOONE 27,320
10 STORY 17,400
11 MARSHALL 55,110
11 CLINTON 36,960
9 HARRISON 280,890
10 SHELBY 30,120
6 AUDUBON 114,960
9 GUTHRIE 60,390
10 DALLAS 43,200
10 POLK 51,110
9 JASPER 62,190
12 POWESHIEK 27,120
13 IOWA 28,840
13 JOHNSON 13,390
10 CEDAR 14,200
14 SCOTT 85,680
12 MUSCATINE 176,520
8 POTTAWATTAMIE 305,520
8 CASS 174,000
8 ADAIR 75,200
5 MADISON 20,600
10 WARREN 30,800
10 MARION 39,900
9 MAHASKA 16,290
10 KEOKUK 9,200
10 WASHINGTON 2,800
LOUISA
7 MILLS 42,840
7 MONTGOMERY 102,970
12 ADAMS 39,640
8 UNION 720
CLARKE
LUCAS
8 MONROE 960
10 WAPELLO 1,100
12 JEFFERSON 600
12 HENRY 480
8 DES MOINES 3,680
8 FREMONT 12,880
8 PAGE 36,720
5 TAYLOR 400
10 RINGGOLD 850
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE


Oat Crop — 1904.
Total 118.435.570 bushels.
State average 29.4 bushels per acre.
Counties show total yield and average per acre.
Farm Value Dec. 1st 1904. $30.793.284.
.26 per bushel.
33 LYON 1.443.850
32 OSCEOLA 1.115,900
27 DICKINSON 728.190
45 EMMET 1.631.700
34 KOSSUTH 4.258.500
28 WINNEBAGO 1,125,880
40 WORTH 2,287,600
34 MITCHELL 2,215,440
30 HOWARD 1.805.100
33 WINNESHIEK 2.276.670
35 ALLAMAKEE 1.771.350
35 SIOUX 1.754.200
33 O'BRIEN 1.757.910
37 CLAY 2,007.640
30 PALOALTO 1,652,700
28 HANCOCK 2,057.440
31 CERRO GORDO 2,154.300
30 FLOYD 2,044.200
40 CHICKASAW 2,414.800
31 FAYETTE 2,236,030
34 CLAYTON 2,135.540
35 PLYMOUTH 1.786.050
35 CHEROKEE 1,756,300
32 BUENA VISTA 1.959.680
36 POCAHONTAS 2,467,440
35 HUMBOLDT 1,277.200
33 WRIGHT 2.274.030
35 FRANKLIN 2.607,850
28 BUTLER 2,039.800
35 BREMER 1.817.300
29 BLACK HAWK 1.532.790
33 BUCHANAN 1.628.880
33 DELAWARE 1.513.710
40 DUBUQUE 2,046,400
35 WOODBURY 996.450
40 IDA 1.286.00
35 SAC 1.756.300
34 CALHOUN 2,127.880
40 WEBSTER 3,021.200
30 HAMILTON 1.527.300
28 HARDIN 1.556,350
25 GRUNDY 1.598.250
33 TAMA 1.719.630
30 BENTON 1.918.800
32 LINN 1,611.520
31 JONES 1,086,550
28 JACKSON 957,040
35 MONONA 632,100
34 CRAWFORD 1.428.340
32 CARROLL 1.555.840
23 GREENE 964.510
34 BOONE 1.695,240
32 STORY 1.645,120
33 MARSHALL 1.707.420
35 CLINTON 1,328.250
33 HARRISON 495.550
30 SHELBY 818.400
30 AUDUBON 934.500
30 GUTHRIE 1.116.900
29 DALLAS 934.480
32 POLK 1.239.040
24 JASPER 991.440
30 POWESHIEK 1.203.300
32 IOWA 1.059.840
31 JOHNSON 1.317.810
35 CEDAR 1.223.750
30 SCOTT 641.700
33 MUSCATINE 720.660
32 POTTAWATTAMIE 963,840
30 CASS 822,300
25 ADAIR 774.500
25 MADISON 478.750
26 WARREN 1.532.520
30 MARION 844.800
30 MAHASKA 964.206
27 KEOKUK 949.050
30 WASHINGTON 978.300
33 LOUISA 666.930
20 MILLS 229.600
22 MONTGOMERY 294.800
22 ADAMS 337.700
23 UNION 408,760
20 CLARKE 317.000
25 LUCAS 345.250
25 MONROE 280.750
40 WAPELLO 647.200
32 JEFFERSON 726.700
35 HENRY 990.850
30 DES MOINES 725.400
22 FREMONT 244.640
20 PAGE 325,400
15 TAYLOR 252.200
20 RINGGOLD 416.400
20 DECATUR 322,200
22 WAYNE 336.380
28 APPANOOSE 287.000
28 DAVIS 427.000
30 VAN BUREN 617.200
28 LEE 628,600


Barley Crop — 1904.

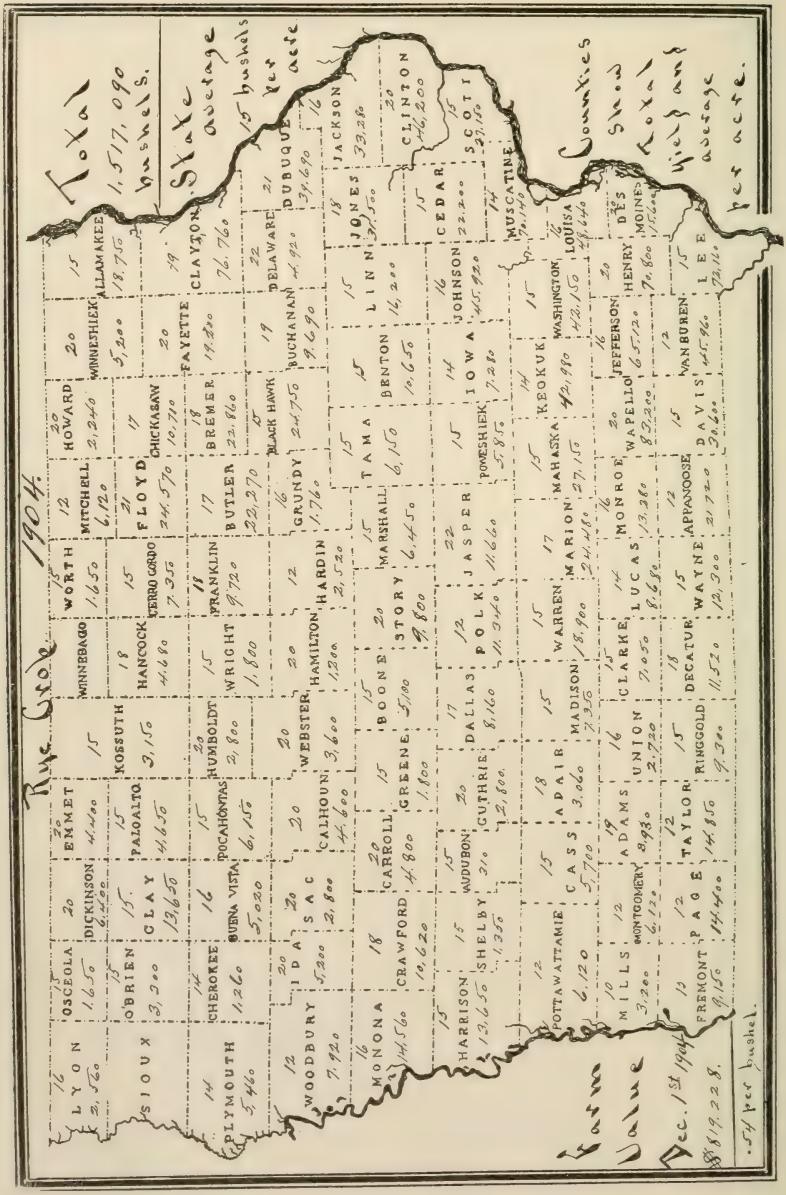
Total 12,317,710 bushels.

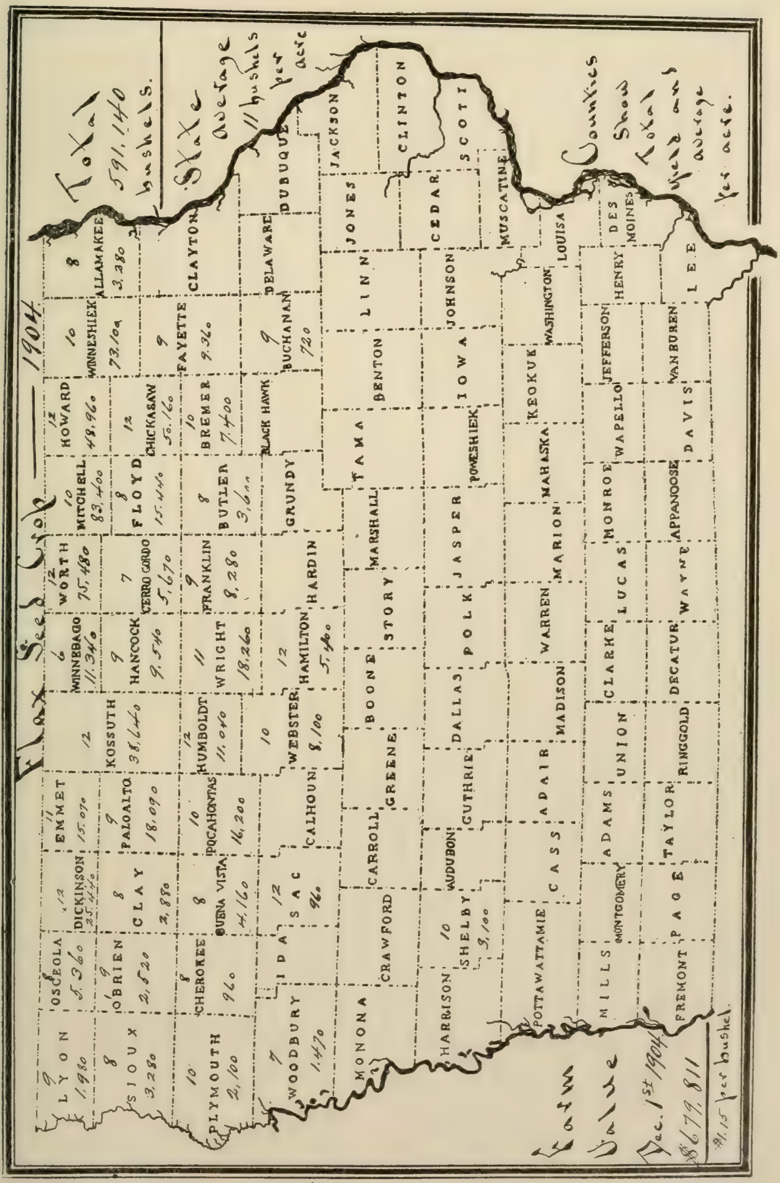
State average 25 bushels per acre

Counties show total yield and average per acre.

Farm Value Dec. 1st 1904 $4,188,021. .34 per bushel

LYON 25 1,131,750
OSCEOLA 26 704,860
DICKINSON 25 380,250
EMMET 35 287,350
KOSSUTH 28 177,800
WINNEBAGO 25 81,000
WORTH 35 192,850
MITCHELL 28 334,880
HOWARD 30 105,600
WINNESHIEK 30 307,800
ALLAMAKEE 26 162,500
SIOUX 30 864,300
O'BRIEN 25 650,750
CLAY 27 439,600
PALO ALTO 30 156,300
HANCOCK 25 62,750
CERRO GORDO 20 41,000
FLOYD 22 103,620
CHICKASAW 32 80,320
FAYETTE 33 173,380
CLAYTON 33 195,030
PLYMOUTH 25 237,250
CHEROKEE 28 132,360
BUENA VISTA 25 81,500
POCAHONTAS 28 87,080
HUMBOLDT 33 63,030
WRIGHT 20 30,600
FRANKLIN 25 26,500
BUTLER 24 19,680
BREMER 28 46,840
BLACK HAWK 24 107,010
BUCHANAN 32 52,240
DELAWARE 30 124,500
DUBUQUE 33 80,520
WOODBURY 30 197,700
IDA 30 123,900
SAC 30 143,100
CALHOUN 27 114,120
WEBSTER 22 21,100
HAMILTON 25 24,500
HARDIN 26 18,980
GRUNDY 24 219,120
TAMA 25 720,250
BENTON 28 457,920
LINN 25 23,000
JONES 30 154,200
JACKSON 25 90,250
CLINTON 30 442,500
MONONA 30 152,400
CRAWFORD 30 65,400
CARROLL 28 85,960
GREENE 25 51,250
BOONE 30 9,300
STORY 30 15,300
MARSHALL 24 60,240
IOWA 27 116,650
JOHNSON 32 185,920
CEDAR 28 324,480
SCOTT 22 515,760
MUSCATINE 28 171,360
HARRISON 30 31,800
SHELBY 25 34,500
AUDUBON 30 68,400
GUTHRIE 25 52,500
DALLAS 20 16,400
POLK
JASPER 25 16,250
POWESHIEK 25 81,250
KEOKUK 20 91,200
WASHINGTON 21 84,210
LOUISA 30 46,800
DES MOINES 21 51,610
POTTAWATTAMIE 30 16,600
CASS 25 24,000
ADAIR 26 9,360
MADISON 26 39,260
WARREN 20 21,600
MARION 25 20,250
MAHASKA 25 75,500
JEFFERSON 30 61,800
HENRY 25 38,250
WAPELLO 25 37,500
LEE
MILLS
MONTGOMERY
ADAMS
UNION 20 10,200
CLARKE
LUCAS 22 7,480
MONROE
VAN BUREN
DAVIS
FREMONT
PAGE 22 18,040
TAYLOR 20 13,400
RINGGOLD
DECATUR
WAYNE
APPANOOSE


Rye Crop 1904.
Total 1,517,090 bushels.
State average 15 bushels per acre
Counties show total yield and average per acre.
Farm Value Dec. 1st 1904 $819,228.
.54 per bushel.
LYON 16 2,560
OSCEOLA 15 1,650
DICKINSON 20 6,400
EMMET 20 4,400
KOSSUTH 15 3,150
WINNEBAGO
WORTH 15 1,650
MITCHELL 12 6,120
HOWARD 20 2,240
WINNESHIEK 20 5,200
ALLAMAKEE 15 18,750
SIOUX
O'BRIEN 15 3,900
CLAY 15 13,650
PALOALTO 15 4,650
HANCOCK 18 4,680
CERRO GORDO 15 7,350
FLOYD 21 24,570
CHICKASAW 17 10,710
FAYETTE 20 19,280
CLAYTON 19 76,760
PLYMOUTH 14 5,460
CHEROKEE 14 1,260
BUENA VISTA 16 5,020
POCAHONTAS 15 6,150
HUMBOLDT 20 2,800
WRIGHT 15 1,800
FRANKLIN 18 9,720
BUTLER 17 22,270
BREMER 18 22,860
BUCHANAN 19 9,690
DELAWARE 22 4,920
DUBUQUE 21 39,690
WOODBURY 12 7,920
IDA 20 5,200
SAC 20 2,800
CALHOUN 20 4,600
WEBSTER 20 3,600
HAMILTON 20 1,200
HARDIN 12 2,520
GRUNDY 16 1,760
BLACK HAWK 15 24,750
JACKSON 16 33,280
MONONA 16 14,560
CRAWFORD 18 10,620
CARROLL 20 4,800
GREENE 15 1,800
BOONE 15 5,100
STORY 20 9,800
MARSHALL 15 6,450
TAMA 15 6,150
BENTON 15 10,650
LINN 15 16,200
JONES 18 37,500
CEDAR 15 22,200
CLINTON 20 46,200
HARRISON 15 13,650
SHELBY 15 1,350
AUDUBON 15 310
GUTHRIE 20 2,800
DALLAS 17 8,160
POLK 12 11,340
JASPER 22 11,660
POWESHIEK 15 5,850
IOWA 14 7,280
JOHNSON 16 45,920
SCOTT 15 27,150
MUSCATINE 14 70,140
POTTAWATTAMIE 12 6,120
CASS 15 5,700
ADAIR 18 3,060
MADISON 15 7,350
WARREN 15 18,900
MARION 17 24,480
MAHASKA 15 27,150
KEOKUK 14 42,980
WASHINGTON 15 42,150
LOUISA 16 48,640
MILLS 10 3,200
MONTGOMERY 12 6,120
ADAMS 19 8,930
UNION 16 2,720
CLARKE 15 7,050
LUCAS 14 8,680
MONROE 16 13,280
WAPELLO 20 83,200
JEFFERSON 16 65,120
HENRY 20 70,800
DES MOINES 20 15,600
FREMONT 13 9,150
PAGE 12 14,400
TAYLOR 12 14,850
RINGGOLD 15 9,300
DECATUR 18 11,520
WAYNE 15 12,900
APPANOOSE 12 21,720
DAVIS 15 30,600
VAN BUREN 12 45,960
LEE 15 72,160



Flax Seed Crop — 1904

Total 591,140 bushels.

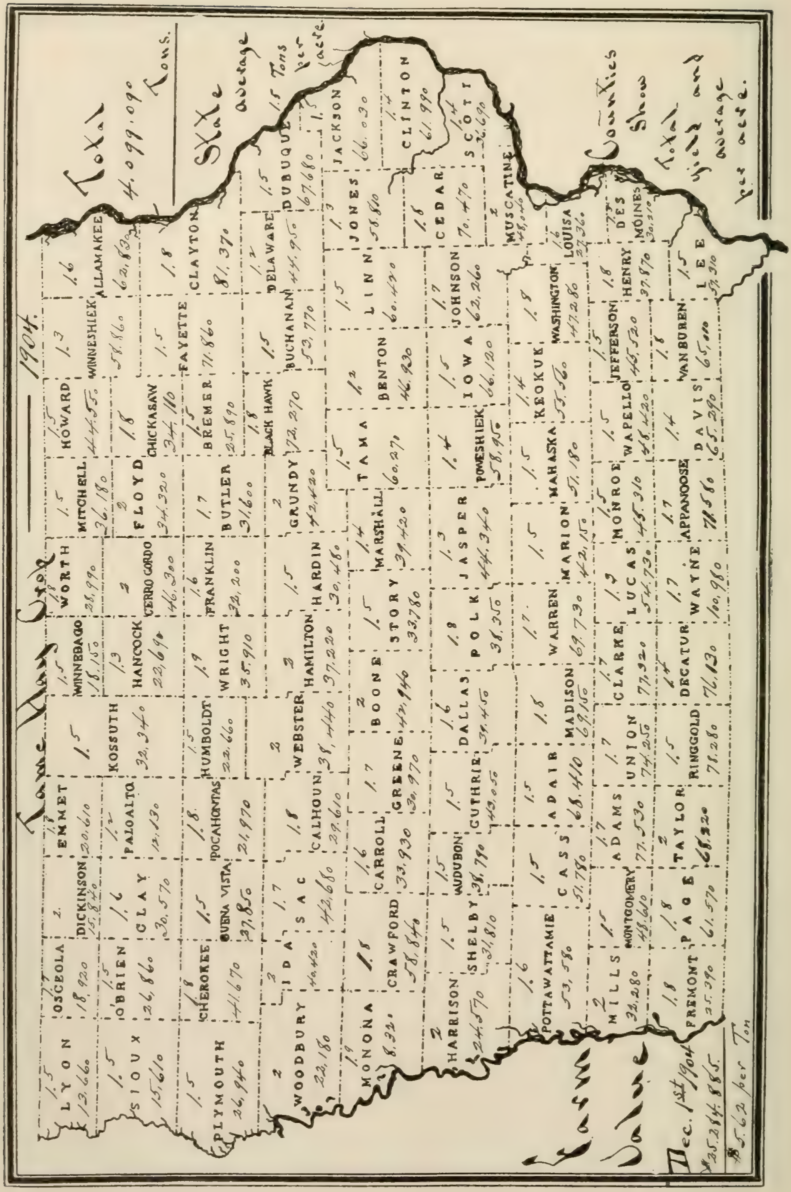
State Average 11 bushels per acre

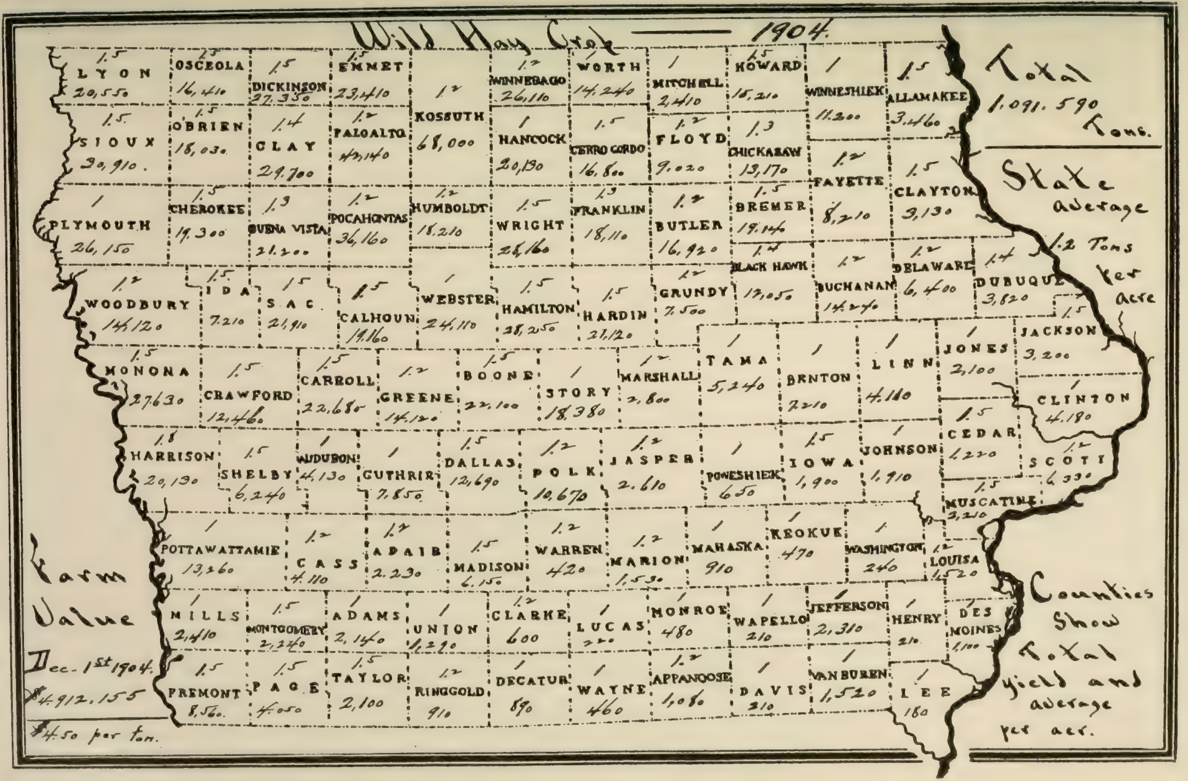
Counties show total yield and average per acre.

Farm Value Dec. 1st 1904 $679,811

$1.15 per bushel.

LYON 9 1,980
OSCEOLA 8 5,360
DICKINSON 12 25,440
EMMET 11 15,070
KOSSUTH 12 38,640
WINNEBAGO 6 11,340
WORTH 12 75,480
MITCHELL 10 83,400
HOWARD 12 48,960
WINNESHIEK 10 73,100
ALLAMAKEE 8 3,280
SIOUX 8 3,280
OBRIEN 9 2,520
CLAY 8 2,880
PALOALTO 9 18,090
HANCOCK 9 9,540
CERRO GORDO 7 5,670
FLOYD 8 15,440
CHICKASAW 12 50,160
FAYETTE 9 9,360
CLAYTON
PLYMOUTH 10 2,100
CHEROKEE 8 960
BUENA VISTA 8 4,160
POCAHONTAS 10 16,200
HUMBOLDT 12 11,040
WRIGHT 11 18,260
FRANKLIN 9 8,280
BUTLER 8 3,600
BREMER 10 7,400
BLACK HAWK
BUCHANAN 9 720
DELAWARE
DUBUQUE
WOODBURY 7 1,470
IDA
SAC 12 960
CALHOUN
WEBSTER 10 8,100
HAMILTON 12 5,400
HARDIN
GRUNDY
TAMA
BENTON
LINN
JONES
JACKSON
CLINTON
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
JASPER
POWESHIEK
IOWA
JOHNSON
CEDAR
SCOTT
MUSCATINE
HARRISON
SHELBY 10 9,100
AUDUBON
GUTHRIE
DALLAS
POLK
MAHASKA
KEOKUK
WASHINGTON
LOUISA
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE


Tame Hay Crop — 1904.
Total 4,099,090 Tons.
State average 1.5 Tons per acre.
Counties show total yield and average per acre.
Farm Value Dec. 1st 1904 $25,284,885.
$5.62 per Ton
LYON 1.5 13,660
OSCEOLA 1.7 18,920
DICKINSON 2. 15,840
EMMET 1.7 20,610
KOSSUTH 1.5 32,340
WINNEBAGO 1.5 18,150
WORTH 1.8 28,990
MITCHELL 1.5 36,180
HOWARD 1.5 44,550
WINNESHIEK 1.3 58,860
ALLAMAKEE 1.6 62,830
SIOUX 1.5 15,610
O'BRIEN 1.5 26,860
CLAY 1.6 30,570
PALO ALTO 1.7 12,130
HANCOCK 1.3 22,690
CERRO GORDO 2 46,300
FLOYD 2 34,320
CHICKASAW 1.8 34,110
FAYETTE 1.5 71,860
CLAYTON 1.8 81,370
PLYMOUTH 1.5 26,940
CHEROKEE 1.8 41,670
BUENA VISTA 1.5 27,850
POCAHONTAS 1.8 21,970
HUMBOLDT 1.5 22,660
WRIGHT 1.9 35,910
FRANKLIN 1.6 32,200
BUTLER 1.7 31,600
BREMER 1.5 25,890
BUCHANAN 1.5 53,770
DELAWARE 1.2 44,950
DUBUQUE 1.5 67,680
WOODBURY 2 22,180
IDA 3 16,420
SAC 1.7 42,680
CALHOUN 1.8 29,610
WEBSTER 2 38,440
HAMILTON 2 37,220
HARDIN 1.5 30,480
GRUNDY 2 42,420
BLACK HAWK 1.8 72,270
MONONA 1.9 8,320
CRAWFORD 1.8 58,840
CARROLL 1.6 33,930
GREENE 1.7 30,970
BOONE 2 42,940
STORY 1.5 33,780
MARSHALL 1.4 39,420
TAMA 1.5 60,270
BENTON 1.2 46,930
LINN 1.5 60,470
JONES 1.3 58,810
JACKSON 1.5 66,030
CLINTON 1.7 61,990
HARRISON 2 24,570
SHELBY 1.5 31,810
AUDUBON 1.5 38,790
GUTHRIE 1.5 43,050
DALLAS 1.6 37,450
POLK 1.8 38,350
JASPER 1.3 44,340
POWESHIEK 1.4 58,950
IOWA 1.5 66,120
JOHNSON 1.7 62,260
CEDAR 1.8 70,470
SCOTT 1.4 32,690
MUSCATINE 2 48,040
POTTAWATTAMIE 1.6 53,580
CASS 1.5 51,780
ADAIR 1.5 68,410
MADISON 1.8 69,150
WARREN 1.7 69,730
MARION 1.5 42,150
MAHASKA 1.5 51,180
KEOKUK 1.4 55,560
WASHINGTON 1.8 47,280
LOUISA 1.6 27,360
MILLS 2 32,280
MONTGOMERY 1.5 48,610
ADAMS 1.7 77,530
UNION 1.7 74,250
CLARKE 1.7 77,920
LUCAS 1.9 54,730
MONROE 1.5 45,310
WAPELLO 1.5 48,420
JEFFERSON 1.5 45,520
HENRY 1.8 37,870
DES MOINES 1.7 30,310
FREMONT 1.8 25,390
PAGE 1.8 61,570
TAYLOR 2 68,320
RINGGOLD 1.5 75,280
DECATUR 1.4 76,130
WAYNE 1.7 100,980
APPANOOSE 1.7 78,560
DAVIS 1.4 65,290
VAN BUREN 1.8 65,010
LEE 1.5 57,910


LYON 1.5 20,550
OSCEOLA 1.5 16,410
DICKINSON 1.5 27,350
EMMET 1.5 23,410
KOSSUTH 1.2 68,000
WINNEBAGO 1.2 26,110
WORTH 1 14,240
MITCHELL 1 2,410
HOWARD 1.5 15,210
WINNESHIEK 1 11,200
ALLAMAKEE 1.5 3,460
SIOUX 1.5 30,910.
OBRIEN 1.5 18,030.
CLAY 1.4 29,700
PALOALTO 1.2 43,140
HANCOCK 1 20,130
CERRO GORDO 1.5 16,800
FLOYD 1.2 9,020
CHICKASAW 1.3 13,170
FAYETTE 1.2 8,210
CLAYTON 1.5 3,130
PLYMOUTH 1 26,150
CHEROKEE 1.5 19,300
BUENA VISTA 1.3 21,200
POCAHONTAS 1.2 36,160
HUMBOLDT 1.2 18,210
WRIGHT 1.5 26,160
FRANKLIN 1.3 18,110
BUTLER 1.4 16,920
BREMER 1.5 19,140
BLACK HAWK 1.4 13,050
BUCHANAN 1.2 14,240
DELAWARE 1.2 6,400
DUBUQUE 1.4 3,820
WOODBURY 1.2 14,120
IDA 1.5 7,210
SAC 1.5 21,910
CALHOUN 1.5 19,160
WEBSTER 1 24,110
HAMILTON 1.5 28,250
HARDIN 1.5 21,120
GRUNDY 1.2 7,500
JACKSON 1.5 3,200
MONONA 1.5 27,630
CRAWFORD 1.5 12,460
CARROLL 1.5 22,680
GREENE 1.2 14,120
BOONE 1.5 22,100
STORY 1 18,380
MARSHALL 1.2 2,800
TAMA 1 5,240
BENTON 1 2,210
LINN 1 4,110
JONES 1 2,100
CLINTON 1 4,180
HARRISON 1.8 20,130
SHELBY 1.5 6,240
AUDUBON 1 4,130
GUTHRIE 1 7,850
DALLAS 1.5 12,690
POLK 1.2 10,670
JASPER 1.2 2,610
POWESHIEK 1 650
IOWA 1.5 1,900
JOHNSON 1 1,910
CEDAR 1.5 2,220
SCOTT 1.2 4,330
MUSCATINE 1.5 3,210
POTTAWATTAMIE 1 13,260
CASS 1.2 4,110
ADAIR 1.2 2,230
MADISON 1.5 6,150
WARREN 1.2 420
MARION 1.2 1,530
MAHASKA 1 910
KEOKUK 1 470
WASHINGTON 1 240
LOUISA 1.2 1,520
MILLS 1 2,410
MONTGOMERY 1.5 2,220
ADAMS 1 2,140
UNION 1 1,290
CLARKE 1.2 600
LUCAS 1 220
MONROE 1 480
WAPELLO 1 210
JEFFERSON 1 2,310
HENRY 1 210
DES MOINES 1 1,100
FREMONT 1.5 8,560.
PAGE 1.5 4,050
TAYLOR 1.5 2,100
RINGGOLD 1.2 910
DECATUR 1 890
WAYNE 1 460
APPANOOSE 1.2 1,080
DAVIS 1 210
VAN BUREN 1 1,520
LEE 1 180

Wild Hay Crop —— 1904.

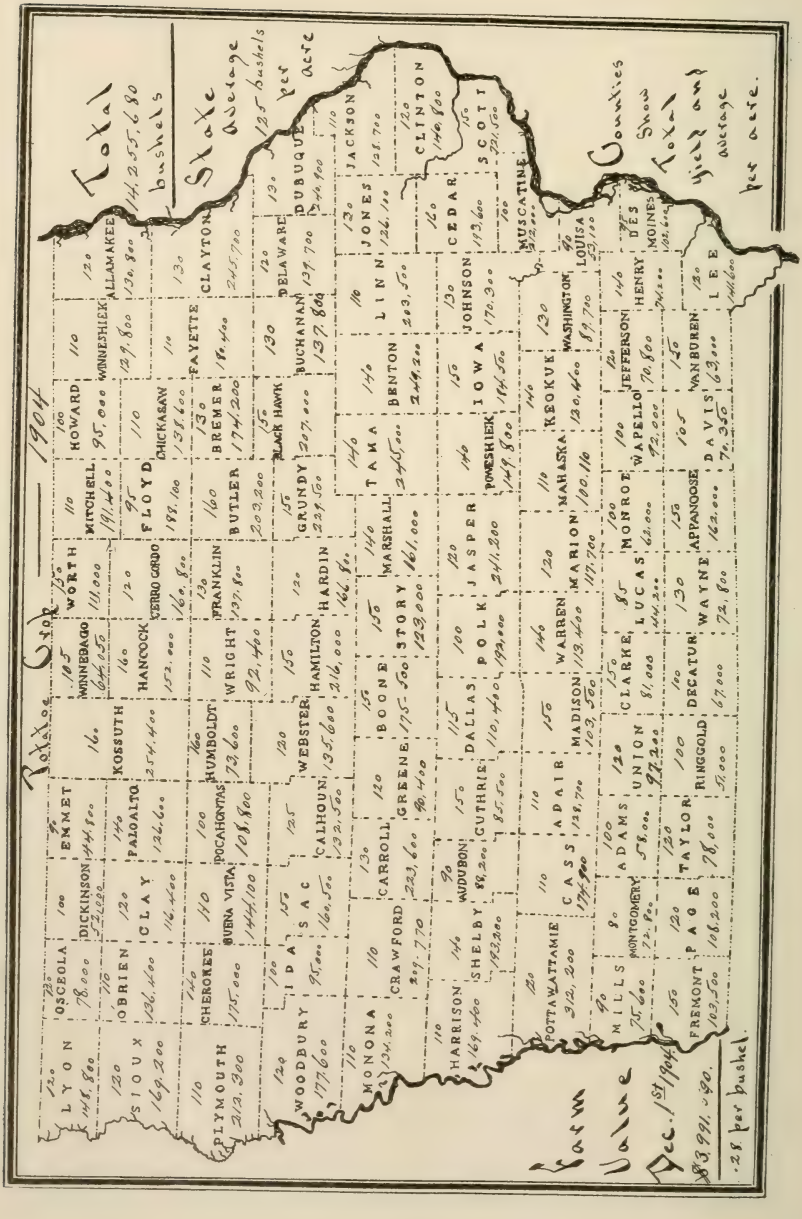
Total
1,091,590
Tons.

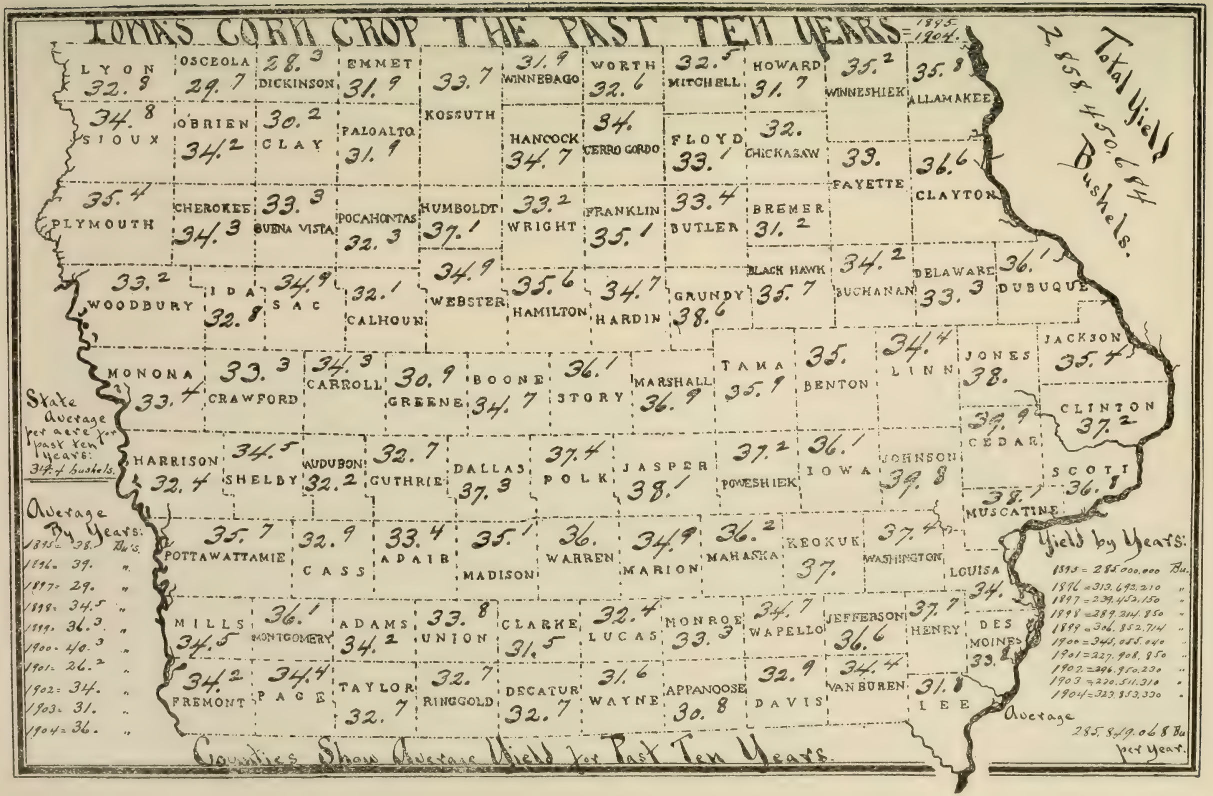
State
average
1.2 Tons
per
acre

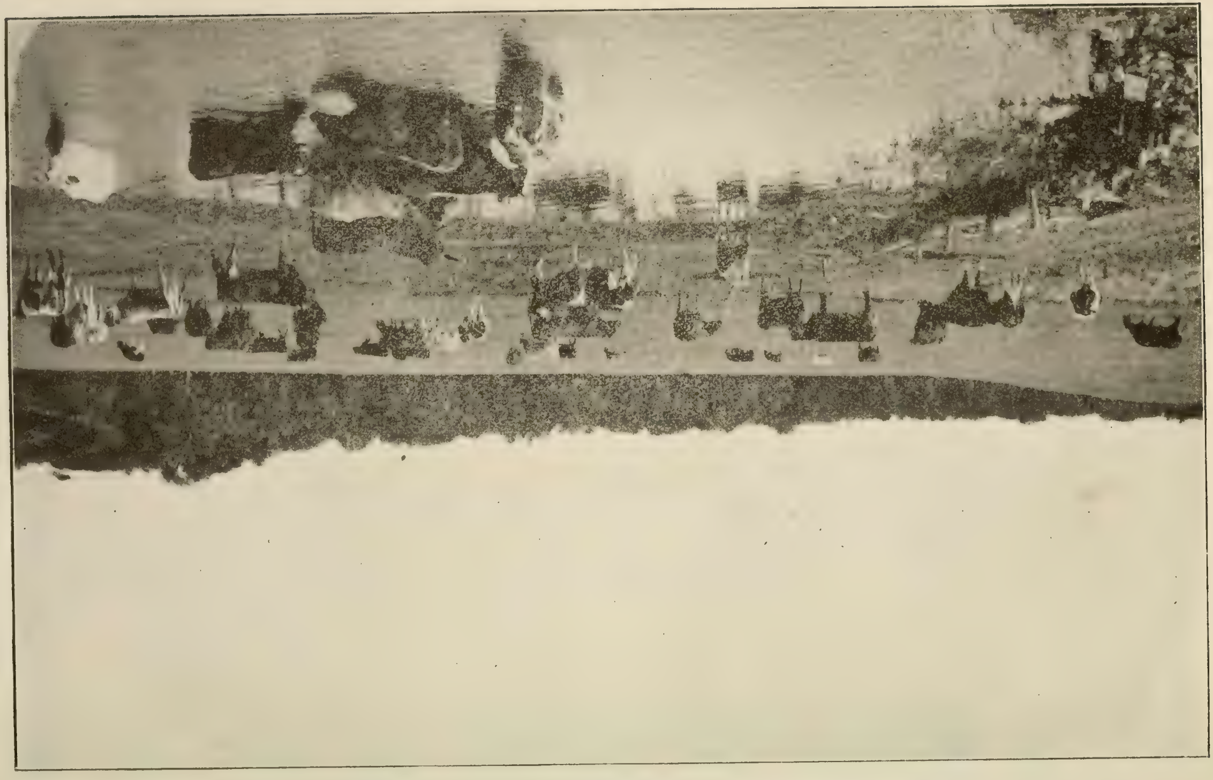
Counties
Show
total
yield and
average
per acr.

Farm
Value
Dec. 1st 1904.
$4,912,155

$4.50 per ton.


Potatoe Crop — 1904
Total 14,255,680 bushels
State average 125 bushels per acre
Counties show total yield and average per acre.
Farm Value Dec. 1st 1904 $3,991.190.
.28 per bushel.
LYON 120 148,800
OSCEOLA 120 78,000
DICKINSON 100 52,000
EMMET 90 44,800
KOSSUTH 160 254,400
WINNEBAGO 105 64,050
WORTH 150 111,000
MITCHELL 110 191,400
HOWARD 100 95,000
WINNESHIEK 110 129,800
ALLAMAKEE 120 130,800
SIOUX 120 169,200
OBRIEN 110 136,400
CLAY 120 116,400
PALOALTO 140 126,600
HANCOCK 160 152,000
CERRO GORDO 120 160,800
FLOYD 95 188,100
CHICKASAW 110 138,600
FAYETTE 110 180,400
CLAYTON 130 245,700
PLYMOUTH 110 212,300
CHEROKEE 140 175,000
BUENA VISTA 110 144,100
POCAHONTAS 100 108,800
HUMBOLDT 160 73,600
WRIGHT 110 92,400
FRANKLIN 130 137,800
BUTLER 160 203,200
BREMER 130 174,200
BLACK HAWK 150 207,000
BUCHANAN 130 137,800
DELAWARE 120 137,700
DUBUQUE 130 240,900
WOODBURY 120 177,600
IDA 100 95,000
SAC 150 160,500
CALHOUN 125 132,500
WEBSTER 120 135,600
HAMILTON 150 216,000
HARDIN 120 166,800
GRUNDY 150 229,500
TAMA 140 245,000
BENTON 140 249,200
LINN 110 203,500
JONES 130 126,100
JACKSON 110 125,700
CLINTON 120 140,800
MONONA 110 134,200
CRAWFORD 110 209,770
CARROLL 130 223,600
GREENE 120 90,400
BOONE 150 175,500
STORY 150 123,000
MARSHALL 140 161,000
HARRISON 110 169,400
SHELBY 140 193,200
AUDUBON 90 88,200
GUTHRIE 150 85,500
DALLAS 115 110,400
POLK 100 192,000
JASPER 120 241,200
POWESHIEK 140 149,800
IOWA 150 184,500
JOHNSON 130 170,300
CEDAR 160 193,600
SCOTT 150 321,500
MUSCATINE 100 312,000
POTTAWATTAMIE 120 312,200
CASS 110 174,900
ADAIR 110 128,700
MADISON 150 103,500
WARREN 140 113,400
MARION 120 117,700
MAHASKA 110 100,110
KEOKUK 140 130,400
WASHINGTON 130 89,700
LOUISA 90 53,100
MILLS 90 75,600
MONTGOMERY 80 72,800
ADAMS 100 58,000
UNION 120 97,200
CLARKE 150 81,000
LUCAS 85 44,200
MONROE 100 62,000
WAPELLO 100 72,000
JEFFERSON 120 70,800
HENRY 140 74,200
DES MOINES 95 102,600
FREMONT 150 103,500
PAGE 120 108,200
TAYLOR 120 78,000
RINGGOLD 100 51,000
DECATUR 100 67,000
WAYNE 130 72,800
APPANOOSE 150 162,000
DAVIS 105 70,350
VAN BUREN 150 63,000
LEE 130 141,600


IOWA'S CORN CROP THE PAST TEN YEARS = 1895-1904.
Total Yield 2,858.450.684 Bushels.
LYON 32.8
OSCEOLA 29.7
DICKINSON 28.3
EMMET 31.9
KOSSUTH 33.7
WINNEBAGO 31.9
WORTH 32.6
MITCHELL 32.5
HOWARD 31.7
WINNESHIEK 35.2
ALLAMAKEE 35.8
SIOUX 34.8
O'BRIEN 34.2
CLAY 30.2
PALOALTO 31.9
HANCOCK 34.7
CERRO GORDO 34.
FLOYD 33.1
CHICKASAW 32.
FAYETTE 33.
CLAYTON 36.6
PLYMOUTH 35.4
CHEROKEE 34.3
BUENA VISTA 33.3
POCAHONTAS 32.3
HUMBOLDT 37.1
WRIGHT 33.2
FRANKLIN 35.1
BUTLER 33.4
BREMER 31.2
BLACK HAWK 35.7
BUCHANAN 34.2
DELAWARE 33.3
DUBUQUE 36.1
WOODBURY 33.2
IDA 32.8
SAC 34.9
CALHOUN 32.1
WEBSTER 34.9
HAMILTON 35.6
HARDIN 34.7
GRUNDY 38.6
TAMA 35.9
BENTON 35.
LINN 34.4
JONES 38.
JACKSON 35.4
CLINTON 37.2
CEDAR 39.9
MONONA 33.4
CRAWFORD 33.3
CARROLL 34.3
GREENE 30.9
BOONE 34.7
STORY 36.1
MARSHALL 36.9
HARRISON 32.4
SHELBY 34.5
AUDUBON 32.2
GUTHRIE 32.7
DALLAS 37.3
POLK 37.4
JASPER 38.1
POWESHIEK 37.2
IOWA 36.1
JOHNSON 39.8
SCOTT 36.8
MUSCATINE 38.7
POTTAWATTAMIE 35.7
CASS 32.9
ADAIR 33.4
MADISON 35.1
WARREN 36.
MARION 34.9
MAHASKA 36.2
KEOKUK 37.
WASHINGTON 37.4
LOUISA 34.
MILLS 34.5
MONTGOMERY 36.1
ADAMS 34.2
UNION 33.8
CLARKE 31.5
LUCAS 32.4
MONROE 33.3
WAPELLO 34.7
JEFFERSON 36.6
HENRY 37.7
DES MOINES 33.8
FREMONT 34.2
PAGE 34.4
TAYLOR 32.7
RINGGOLD 32.7
DECATUR 32.7
WAYNE 31.6
APPANOOSE 30.8
DAVIS 32.9
VAN BUREN 34.4
LEE 31.8
State Average per acre for past ten years: 34.4 bushels.
Average By Years:
1895 = 38. Bu's.
1896 = 39. "
1897 = 29. "
1898 = 34.5 "
1899 = 36.3 "
1900 = 40.3 "
1901 = 26.2 "
1902 = 34. "
1903 = 31. "
1904 = 36. "
Yield by Years:
1895 = 285.000.000 Bu.
1896 = 313.692.210 "
1897 = 239.452.150 "
1898 = 289.214.850 "
1899 = 306.852.714 "
1900 = 345.055.040 "
1901 = 227.908.850 "
1902 = 296.950.230 "
1903 = 220.511.310 "
1904 = 323.853.330 "
Average 285.849.068 Bu per Year.
Counties Show Average Yield for Past Ten Years.



Scene on the Iowa State College Grounds, Ames, Iowa.

# PART III.

## PROCEEDINGS OF

## Iowa Swine Breeders' Association

## AND

## Iowa Improved Live Stock Breeders' Association.

## PROCEEDINGS OF THE ANNUAL MEETING 1904.

*By C. C. Carlin, Special Representative of the Twentieth Century Farmer.*

### OFFICERS OF ASSOCIATION.

| | |
|---|---|
| D. L. Howard, President, | Jefferson. |
| Joe Steward, Vice-President, | Ames. |
| J. A. Benson, Vice-President, | Primghar. |
| W. D. McTavish, Secretary and Treasurer, | Coggon. |

The annual summer meeting of the Iowa Swine Breeders' Association was held in Des Moines, Tuesday and Wednesday, June 14th and 15th. There were in attendance perhaps one hundred prominent swine breeders of the State and men having special interest in the corn improvement subjects that constituted a predominant share of the program. W. Z. Swallow, president of the association, opened the meeting with the following address.

## PRESIDENT'S ADDRESS.

It is a fitting acknowledgment of the importance of the sessions of this organization that, in the fact of the unusual pressing condition of farm work, so great a number of the members are present. Ours is a work the importance of which is second to no other branch of agricultural pursuits of our Nation, and it is a matter of no little pride to us to know that the hog raisers of Iowa last year produced hogs whose value equaled one-sixth of the hog product of the entire United States; that on January 1st of this year the farmers of Iowa owned 7,364,268 hogs, or almost double the number owned in any other State. Illinois follows with 3,700,000, then Nebraska with 2,800,000, and Ohio with 2,700,000, while Rhode Island winds up the list with but 12,000 head. It has been my pleasure to witness the great advancement of the swine breeding industry from almost an insignificant beginning to the principal money making feature of the great corn belt. You all know how great has been the influence of the hog on the progress, development and improvement of the country.

The high place which the hog now holds as an element in public prosperity is, however, no evidence that the work of the Iowa Swine Breeders' Association and kindred organizations has been completed. It should, on the contrary, spur us on to still further improvement, and the production of an animal which shall still more nearly approach the ideal hog—the one that brings the top price at the stock yards.

Market reports show that a discouragingly small per cent of hogs sent to market bring the high figure. While of course we as breeders can not be held to account for the great number of hogs, we are in a great measure responsible. The best hogs can only be raised by using good blood. If we fail to provide good blood the pork raiser who depends upon us for his seed will meet with disappointment. The proper selection of breeding stock is the most important point in the breeder's business and I trust that subject may receive some discussion at this meeting.

The season just past has in many respects been a most trying and unsatisfactory one to farmers, yet I believe the breeder of pure-bred hogs has felt the depression less than any other. The outlook for the coming season seems an encouraging one. Owing to the scarcity of feed fewer brood sows than usual were kept, and the pig crop was still further reduced by the unfavorable spring. These facts, with the probability of a good corn crop, justify the expectation of a good demand for pigs of both sexes and at fair prices. The intimate connection of good corn crops with the welfare of the hog raiser, gives especial interest to that portion of our program devoted to corn culture, which Professor Holden has kindly consented to talk upon.

As usual we are under obligations to the National Association of Expert Swine Judges, whose meeting will take place tomorrow. Their work is all of the practical and instructive character, and I am sure that everyone in attendance today may learn something to his advantage by attending.

# IOWA'S CORN AND HOG PRODUCT.

This subject, which was the first on the program, was presented by Jas. Atkinson, of Des Moines, and his paper is here given in full:

An examination of statistics relating to Iowa's hog and corn product reveals the fact that in both these commodities this State stands out as a leader, considering the matter from the standpoint of quality or total value. On January 1, 1904, Iowa owned 16 per cent of the hogs of the United States, these representing the value of practically $50,000,000. This is a significant fact, inasmuch as it means that our people are converting a very large proportion of their grains and grasses into the higher priced products, thereby keeping the fertility at home. Of course, our ability to produce hogs is based upon the fact that conditions are almost ideal for the production of corn—the grain above all other grains which, if properly used, is the best hog food on earth.

I attach considerable significance to the phrase inserted above, "if properly used." There are those among our people who are engaged in swine husbandry whose real occupation is signified by the term ''corn hauler'' rather than "hog breeder." These men accomplish much in the direction of reducing the size of their hogs, as well as their vigor, while at the same time they are constantly tending to lessen their prolific qualities. These accomplishments are not necessarily the result of using corn, but rather abusing it by employing methods that are not strictly common sense in character.

Statistics reveal one fact upon which we may ponder with profit, namely, that the average value per head of the hogs in this State is low compared with many other states of the Union, and while several factors, many of which are in no way discreditable, enter into this phase of the question, yet undoubtedly much may be accomplished by way of increasing the value per head of our hogs by freer use of good blood and by the employment of sensible methods of feeding.

I have no sympathy with those who advocate cutting corn out of our hog ration in order that we may increase the stamina, lengthen the body and multiply the prolific power of our swine, because, while these are all commendable, yet we must not lose sight of the fact that under our conditions there is more money in the short, fat hog fed on corn than there is on the long hog that must be fitted for market on the higher priced by-products and grains that are not produced in their highest perfection in this State. The fact that our best farmers are able to grow upward of 3,000 pounds of good corn to the acre is significant, inasmuch as this amount furnishes about three times the feeding value that can be obtained from the other cereals. We must, therefore, ever be on the alert to acquire more knowledge on the "how and why" of feeding this crop, to the end that the greatest possible profit may be realized.

A feeling of weariness is experienced by the sensible hog breeder when half-posted characters advocate the doctrine of withholding corn from the brood sow during the gestation period and from the growing pigs until they are ready to be fattened for the market. If it becomes necessary to do this we had better go out of the hog business—a change that I do not presume will be made during the days of this generation.

Do not understand me to advocate an "all corn" ration. The use of pastures in summer, including the grasses, clovers, rape and sorghum, must be employed in conjunction with corn if we are to keep up the stamina of her herds, while supplementary foods, such as mill products, the by-products of flax and corn or of the packing house, must be used when no green food is available. For growing pigs I know of no supplementary food that will excel sweet skim milk, especially if it is fed warm, fresh from the separator. Where skim milk is lacking breeding stock, until it is eight or nine months old, should, in our opinion, have a liberal allowance of the supplementary foods mentioned above. Our herd of pigs three months old is receiving a mixture composed of five parts corn, three parts shorts, one part ground oats and one-half part tankage and alfalfa meal, these being fed in the form of a thick slop. This ration, you will see, is composed of a little more than half corn. In addition the pigs are receiving a liberal ration of dry, shelled corn, scattered night and morning over a clean part of their blue grass pasture. The skim milk supply does not admit of feeding more than about one quart per day to each pig, but on the ration described above the herd is making highly satisfactory gains.

As hog breeders I know you are eagerly watching the investigations of those scientific men who are engaged in improving the corn crop, especially those who are endeavoring to establish varieties that are richer in flesh forming constituents than those now grown. You doubtless know that it has been found possible to increase the protein content of corn to the extent of two or three per cent, and we are now only waiting to ascertain whether or not this percentage may be kept up, and especially to see if this may be done without lessening the yield. If the protein content of our corn could be increased two per cent I believe it would practically do away with the necessity of feeding high-priced by-products—a condition which would in turn lead to cheaper production.

The day may come when we shall have some sayso in the matter of regulating prices, but at present it seems as though we are sadly at the mercy of a buyers' ring or combine. If it is impossible to accomplish anything in this direction it certainly is not impossible to work along the lines of lessening the cost of production, and in this way we may arrive at that point where a reasonable margin of profit is afforded the man who produces hogs for the meat market. As before mentioned, I believe our experiment station workers can do much for the swine breeder by continuing along lines that are already well started in some institutions.

While a straight corn ration could be fed at less cost than the one mentioned above, yet I believe that the effect of these nitrogenous supplementary foods in building up a good frame will more than repay for the extra cost of this food. Of course it should be understood that these hogs are to be used for foundation stock and are not intended for the block, but in either case it is my opinion that it will always pay to use some of the rich nitrogenous foods in supplementary quantities, because in this way we seem to derive much greater benefit from what corn we feed.

I regret exceedingly that mill products have been so high this spring, because this means that these products have been used in too sparing quantities, although it is hoped that the abundant growth of legumes and grasses will in part make up for the lack of these products. In spite of the fact that our hogs are not worth so much per head as is the case in some of our sister noncorn states, I still repeat, stick to the Iowa pig and feed him liberally on Iowa corn. Keeping constantly in mind the cost of production, make use of the nitrogenous by-products, especially in the case of growing pigs in order that their constitutions may be fortified against disease attacks and that the length of body, and especially the prolific powers, may be not only maintained, but increased over what they are at present.

As most of you are breeders of foundation stock you are carrying a heavy responsibility, because it is to you the common farmer must look for material to improve his grade herd. In the past harm has resulted from men sending out inferior registered stock, and while there is a temptation to always sell in the dearest market, yet men who are endeavoring to build up for themselves a reputation adopt the practice of unsexing all animals that do not come up to a certain standard. This from the standpoint of self-interest seems to be the wisest policy in the end, while in the course of a decade who can guess how much good the general adoption of such a plan will confer upon the swine raisers of our State? Study the weaknesses that are to be observed in the common hogs that are sent to market and endeavor to build up the foundation material of a character to correct the defects exhibited in these herds.

The outlook is bright for the hog breeder who will take one breed and stick to this through thick and thin and who will use well bred, meritorious males from generation to generation. The ninety and nine are breeding nothing but nondescript hogs, crossing and recrossing until there is no size and but little vitality left, while the opportunity is afforded the hundredth man to furnish these, not only with correct ideals, but also with correctly formed hogs, and to all such the hog business in my estimation will be profitable during the next decade.

A general discussion of the subject which followed the reading of this paper showed that among breeders, corn is looked upon as a valuable hog food, but that its greatest merit is in the final finishing for market. The two expressions given below, from different men, will perhaps serve to present the drift of the argument. One said:

Corn should be used largely, but the less corn the better for breeding. In feeding my breeding animals I use oats shorts largely, mixed with bran and a very little corn. I have no milk to feed on the farm and as long as they are getting milk from the dam I give them corn. After that I give them oats with the hull taken off and partially reduced in bran and a very little corn. This being in the corn belt corn must enter into the ration.

The man who feeds for the market must feed corn, but if you have fifteen or twenty brood sows I believe you can afford to feed them something besides corn. I breed Duroc-Jerseys exclusively and we claim a good deal for the prolificness of that breed. You ought to use something besides corn. The oats I feed are first roasted and then put through a sort of brush which brushes off the end and hull of the oats. It is done by centrifugal force. The oat stands on end and the end is ground off so you get a very pure article. When the oat is put through the huller the tip of it is broken off. The oats shorts make a fine feed when you get the genuine article. Hogs lay on fat better with corn, but I can not say that I like corn for breeding stock. I can not agree on corn for a diet.

The other gave some of his experience as follows:

I am feeding about one-third corn. If I am feeding a bunch of hogs for the market there is nothing better to produce the fat, but for breeding stock the less corn the better off you will be. We can grow good hogs without corn, but we can grow corn so much cheaper than other foods that it would seem advisable to feed some of this corn. I advocate that you feed some oat shorts, but let them have some corn to put them in the sale ring. The sale and a breeding animal are two different things. A show hog is not a breeding animal—is not a reliable breeder. I maintained last year and maintain it yet, the less corn you give a breeding animal the better off you are.

## BREEDING AND CULTURE OF CORN.

Prof. P. G. Holden, of the Iowa Agricultural College, gave an extended talk upon this topic, from which we extract the following more important statements:

It seems to me that this is a very proper place to discuss the question of corn. It is very closely connected with the great business with which you people are connected. You are unique in your position as representing the greatest association of any State in the United States, producing more hogs than any other three states. Fifty per cent of the hogs that go into Chicago annually come from this State. It is one of the best evidences of the particularly high condition of agriculture and it will mean more in the future development of the agriculture of this State. It means that it will lead us on to do our best in every way possible to hold that position and even increase the worth of our animals.

One thing is found to be true and that is that the people of this State are more anxious to study and investigate these things than in any other State. They want to study and improve their corn. More interest is taken in your swine breeding matters and in the agriculture college. More people come there to visit the college. But it has been a great disappointment to me to fail to find family clubs in the State, as we have them in many other states. In Michigan 400 clubs are in existence. When families get together to discuss these questions and improvements themselves you will all realize that not all of life is to lay up money, and there are not many of us that would want to trade off the welfare or good name of our boys and girls for all the money in the country.

What we need most here in regard to corn is to get our people together to practice and make use of those things that we all know, so that we can take hold of the improvements and conditions in our own neighborhoods. It is not so much learning more, but of taking hold and doing those things that we all know. We need to take more interest in corn. Corn will not produce to its limit until the people will follow out the methods that will produce more bushels to the acre. You know very well in connection with the hogs that there are days and times when you sit up all night and take care of pigs, and it means more than days or weeks of work. If there is any one thing that I have in mind it is that feeling and desire on my part to originate if we can these clubs, to bring the people together and to feel that they will have corn judging contests and get to work together. That is the only way we can expect the very best results—for corn and hogs are of very little consequence.

As I said before, I can only hope to call attention to a few things, and they are not along the line of scientific research, but the things that we can all do and all know. We can increase the protein in corn, but it takes years to do it and only to a small extent, but if we will pay attention to the kind of seed and plant corn so as to get the right amount we can produce all that the acre is capable of.

We get hundreds of letters at the college at Ames asking us what kind of corn is best for the different kinds of soil. We can not tell, as you know very well that corn adapted to one part of the State is not good for another. This has been settled largely in some of the counties in this way. The county poor farms have been made experiment stations, and are called the county experiment stations. They grow different kinds of corn on the farm, side by side. They watch the growth of the different kinds of corn, the number of stalks to the hill, and which obtains the best results.

Variety and strength of ground are important factors. As to the amount of seed, in some cases four kernels might be necessary, and in others two or three might be plenty. We are just at the beginning. Our land is valuable and becoming more valuable, and we have to get a few more bushels and the profit on our hogs depend on the corn we feed them. Get the hog that will make the most out of each bushel of corn and raise the most number of bushels per acre. There are many questions along this line that have not been settled and must be taken up and the county poor farm will be the place where they will be taken up.

In a dry season we can get more in a hill with one stalk than in a hill with three or four. At the time when you plant the corn select out the twenty or forty best ears of corn that you have and plant those on one side of the field—not with the rest—on the west or south side. After the corn has started go into this part and pull out the stalks that are not good, or if you do not do that and are pretty careful with it, wait until it has just tasseled and go through the field and pull out these tassels from the stalks that are weak, and in that way you will practically get rid of the pollen of all that corn. We go into the field and save the good ears of corn, thinking that like ill produce like, but on the grains of this fine ear of corn is the pollen that has drifted over and we know only one side of it. The female is the corn and the male is the pollen, and if we pay no attention to it you know the result. It is one of those things that must be considered by all of the farmers throughout the State.

I said on west or south because the wind will blow the pollen over it. The neighbor's corn might blow over it and it is owing a great deal to the situation of the field. If there was a road and hedges between there would not be much danger of mixing from the other side. We find that if there is a hedge there is no mixing from the north and east, but from south and west about eighty rods would be necessary between the two fields. If the corn is the same variety it does not make much difference, but it is much better if it can get the pollen from the strong stalks.

As to the comparative value of butts and tips of ears for seed purposes, we find that the butts and tips are not as good as the middle. The middle comes up first, and the tips last because they are a little weakly. The trouble of the corn coming up through the country would lead me to call attention to the serious condition of affairs. People did not pay attention to the seed. It is due to poor seed rather than butts and tips. In favorable seasons a great many times you will see stalks with two large ears on them. I am not certain that it is desirable to plant these ears in the hope of cultivating that feature. If we get one good ear to a stalk we are doing well. Depth of planting is important. One of the greatest faults this year was farmers planting corn the same as last year. This year it went in deep.

Perhaps there is no one thing that is so important in our corn crop as the question of a stand and probably there is nothing that is so serious as that we have on an average two-thirds of a stand of corn in this State. The point that I want to investigate is that we need to realize the importance of having a good stand of corn. The greatest cause of our poor corn is the poor stand. We do not get returns that the land is capable of giving. We could have a good stand as well as a poor one. I went through a field that had from ninety-six to ninety-eight per cent stand of corn, and when I came out the man who owned it had come over from across the way and said he had a good stand of corn and it had cost him a lot of work. He said he spent a week testing each ear of that corn and spent another week getting his planter in shape to plant the corn. But he had fine results and showed how well he did his work.

My experience has for a number of years been that we fell down in our stand. Let us be sure that we follow out these things ourselves. On the Funk farms we tested the corn for many hundred acres of corn and tested, each ear of it, and it certainly can be done here. We lay out the ears on the floor in rows so that they are side by side, and then take a box that would hold the corn from about one hundred ears. We have some sand in the bottom covered over with a cloth. The sand is damp and the cloth is marked off into squares, each one of them numbered so that we can put a kernel from each ear in the squares, making the number of the square correspond with the number of the ear from which the kernel was taken. This makes a good general test and we feel that we have a pretty good corn to plant. Sometimes we take three kernels out, one from the tip, one from the butt and one from the middle. This year we took six. In three or four days we lift the cloth off and can see exactly what they are doing and from what ears the good kernels came. We take out those that do not seem to be growing and push out the ears that we took them from. It would mean millions and millions to the farmers of the State if every farmer would do this. I wish we could all do this another spring.

The next thing in connection with getting stand is the planter. We have forty-five and only about one-third of them would give us an even stand last spring. We put them on the floor and tested them with the corn and arranged them so that they would plant evenly. The butts and tips should be shelled off in order to get a better stand, and each ear should be shelled by itself, and when it is shelled put them together, the long with the long. We have been trying to make our planters plant large and small at the same time. Seed that is kept dry in the winter would seem to retain its vitality a little better than that which is kept moist. Corn contained a great deal of moisture this year, owing to the fact that it dried off on the outside, making it appear dry. Whenever it was put in the crib the best corn was on the outside of the crib, where the weather could get to it and dry it.

I believe we should so breed our corn that it would have a type of character and be uniform. We should do it ourselves and do it well. We can all improve our corn from our own study and examination of it. We have found that an ear of corn with strong germs is the one that is the largest. The little plant is supplied with food from it. Poor ears have small germs. The poorer the germ the poorer the tip, and the less of the white matter the better the corn. The kernels that are plump and full at the tip are the best. You do not need too big a cob, as a large one is hard to cure. But, on the other hand, I would not have it too small.

The most things that we know about corn are what we don't know, but it is quite a question in my mind as to whether we should breed for a big kernel or a small one. If we get our kernel too big we find that there is a tendency to slow maturity and it is hard to get the moisture out of it so it will keep. There seems to be a limit, but we do not know what that limit is The proportion of cob to corn does not amount to much. I think I should say eighty-five to eighty-six per cent. In other words fourteen to fifteen per cent cob. The important thing is the number of bushels to the acre. Whenever I judge corn I try to pick out that sample of corn that I would like to take home with me to my farm. I think we are doing damage by making our judging of corn simply a matter of science.

# THE PRESENT AND FUTURE SWINE BREEDER AND FEEDER.

George H. Moore, of Kansas City, Mo., discussed this subject in brief as follows:

The swine breeder has made possible, through years of energetic toil, the possibilities now possessed and enjoyed by the farmers and feeders of swine all through the corn belt. The present thoroughbred breeder of swine, regardless of strain, puts his best thought, effort and skill into the development of a certain type and backs his judgment by conversation, argument or letter. There was a time when men in this audience believed a good hog could not be produced in the west, but breeders of swine in the State of Iowa have not only transferred this great establishment to this state, but more and better hogs are bred and fattened in Iowa than in any other State in the Union. The hog is a machine for man's use, comfort and enjoyment as well as his individual care. If you do not administer to the hog wisely and well you can not hope to reap the profits in the future. Ten years has demonstrated to the feeder that he can make a bunch of hogs weigh about so many pounds at a certain age, owing entirely to care, conditions and feed. The breeder has demonstrated along the same lines the kind of hog he determines he ought to have at a certain age. Now, do you not agree with me that you may not only have the ideal hog today, but have had the ideal for some years past? Yet you have not slackened your efforts nor have you rested. I am convinced that the ideal in form, type development, constitution and money making has been reached.

You raise on your farms, or at least should raise, what is needed most to develop your herds, droves and flocks and bring the same to early maturity and market value that remunerate you for your time and labor. Every man, to be a success, must know the exact cost of production before he is competent to put a price on his product or determine his profit.

## HEALTH OF THE HERD.

D. L. Howard, to whom the subject of "Health of the Herd" was assigned, made but a short talk, but what he said brought out an extended discussion that contained a good deal of information. The principal part of his remarks were as follows:

A complete knowledge of and close attention to details are necessary to the health of the herd. No line of business can be successfully prosecuted without a faithful following out of minor details, and live stock raising is no exception. Success in raising hogs is attained by watchfulness, strict observance of every condition, prompt recognition of every index of physical condition, keen investigation of the results of feeds, cares of environment and a string of collateral influences and treatments that will make themselves plain to every thinking man. Ancient alchemists and scientists spent their time in vain attempts to extract gold from base metals and to discover the elixir of life. By the modern order of things men make gold by looking after the little things.

The careful and intelligent care of the herd will in most cases forestall loss by disease. Keep hogs clean and they will keep well in nineteen cases out of twenty. The twentieth case will be cholera. Only one case of disease in twenty is cholera. If the cholera germ comes they will have cholera. I have had experience with some cholera cures and observation of many and none are of value.

I do not believe in all corn or all protein. Corn is a good feed. Oats, wheat and grass are valuable. A pig may either be pushed or starved for the first six months so much as to make it unprofitable for a feeder at any time afterward. Flesh is not always an evidence of health. Keep hogs clean inside. Worms are the greatest enemy of the hog. Keep them clear from lice and mange. You can not improve the animal without the forcing process, and this calls for looking more closely after the health. A perfect knowledge of any animal takes away chances of disease except in epidemic form. In nineteen cases out of twenty loss is due to ignorance. I do not believe it possible to so feed the hog as to make it proof against every disease. The difficulty in the treatment of swine diseases arises from the confusion of symptoms. At times there may seem to be every symptom of cholera when the disease really does not exist. Good health at time of attack by cholera may reduce the proportion of loss. I think with good nursing I can save 35 per cent of those affected.

This brought out Doctor Gay of the veterinary department at Ames, who gave as much information on the subject as has ever been presented at these meetings in the same number of words. Briefly he outlined the difference between cholera and swine plague. Cholera is a blood disease affecting the liver and intestines, and being closely allied to typhoid fever in the human family Swine plague is a lung disease, and similar to pneumonia. He stated that the bureau at Washington, which was the most extensive as well as the best equipped of its kind in the world, had made a careful, extended and elaborate study of these diseases in all their forms and under many conditions and circumstances, and yet, with all these advantages and with every particle of known information on the subject at their command, they were unable to offer any treatment that would cure. The researches of science could only offer preventive remedies. These are quarantine and a general healthful condition. Keep away from the yards all who may have any chance of carrying disease.

Doctor Hammer said he could cure from sixty-five to seventy per cent of hogs affected with cholera and outlined his treatment. He said:

> Confine the hogs where there is a good circulation of air and where an even temperature may be maintained. Keep them on some sort of floor so that they can not absorb moisture from the ground. Give pure water. Give some soft laxitive and get the bowels open quick. Keep away all solid food. Make a liberal use of antiseptics and cathartics.

Henry Wallace said that when the disease appeared in his herd he would kill one that showed symptoms, and if it proved to be cholera he would kill and burn everything under three months old, stop all food except grass and water, keep his aged sows and sell everything else that the shipper would take. In defense of the latter violation of State law, he said the law was a dead letter and that the stock yards inspector would be responsible anyway. He saved most of the brood sows and considered them as having additional value as immunes. His advice as to shipping was not well received.

## THE FUTURE CORN PRODUCER.

"The Future Corn Producer" was the theme discussed by Henry Wallace, who said:

> The days of the cheap corn, as we knew it in the past, are over. I do not say that there will not be some cheap corn, but it will not last as it has lasted in the past. I do not know of any three years in my life in which in one of the years corn was not worth thirty cents a bushel in the crib, though it might be twenty or twenty-five cents some other years. The corn producing territory is limited on the west by altitude. Twenty-five hundred feet above the sea level the nights are too cold and corn can not be grown successfully, unless you get a very high price. On the north it is limited by temperature, and while the corn growing country will go north gradually, when you get north of Iowa fifty miles you are out of the corn producing country. They will have it there as a part of a rotation The rotation will maintain the fertility, and they need the corn, but it will be for home consumption. I might say that it is limited on the south by temperature and by the corn root worms and various other evils that attend the crop. It is limited partly by the wearing out of the land, partly by the superior adaptability to pasture on the east.
>
> Take down the map of the United States and mark around the territory where corn is relatively cheaper and you will be surprised to see how small it is, including the northwestern and possibly the western portion of Ohio, Indiana, Illinois, Iowa, Missouri, eastern Kansas and eastern Nebraska. We must grow just as much corn as before, not by extension of territory, but by the increased production per acre. I do not believe our acres will

increase, but decrease, but we can increase our yield per acre. That is, the right kind of man can do it—the corn producer that you asked me to talk about. He will have to have a rotation of crops in the first place. You can not keep on growing corn year after year on the same land, no matter how good it is, because the Lord won't let you. He sends the red ant and lice.

Professor Holden has told you about the future corn producer, who is to grow seventy-five or one hundred bushels to the acre, and how to select the seed, and I regard his services as first-class. We are going to have better corn than I expected this year, but not very good. People are replanting their corn and I think many who brought seed from a distance are complaining of short stands. It looks easy to get 100 bushels to the acre. It is not so easy when one comes to grow 100 bushels of corn to the acre. It is a groundhog case. Our land is getting up to $75, $80 and $100 an acre. This price can not be kept up unless we put our brains in our corn work. Of course you must have good, rich land. You will only get that by rotation. You will have to do it. You must keep up the physical condition of the soil. You are asking about fertilizers. You grow clover, keep up as good rotation as possible, keep your land in good condition physically and let the other fellow fret about fertilizers. If you don't, your son will have to fret about the same problems and you have left him a wornout land that should be given to him with valuable fertility.

Men ask what is good for impaction of the stomach and cornstalk disease. It is another blessing that is sent to make you take care of what is given you. You must begin to do it now. There is no first-class pork that is grown in a corn-exporting country. It is all grown in corn-importing countries or countries that do not grow any more than for their own consumption. Denmark has the finest pork in the market, and all the corn they have they import from this country, and they use it wisely. Irish bacon is very fine and you could not grow corn there to save your life. The nights are too cold. While they use corn intelligently, you can scarcely go to an Irish farmer who does not have American corn somewhere. So you find it in Scotland. They use it wiser than we do. Corn-fed bacon is not the best bacon, and when we give it to the markets of the world we must give more. We must quit using so much corn. It is so easy to go to the crib and throw out an ear of corn and the hogs like it so well that we keep feeding corn, and at last we have hogs so short, and it is because we have fed corn year after year. What we need to do is to grow fewer acres of corn and more corn, and have pasture for our hogs. They need something else and I have come to the conclusion that no man can raise hogs successfully unless he has an alfalfa field. I am not alfalfa crazy. I don't say grow it for pasture for cattle, or sheep, or for hay, but I do say that you ought to have a pasture for hogs. This spring I wanted to kick myself off the farm because I did not take my own medicine and did not do what I advised others to do—sow an alfalfa field to put hogs into, and for a month we did not have pasture we should have had. Clover was late, oats and rape not big enough, and alfalfa ten inches high and the hogs reveling in it.

I have seen hogs growing out in Nebraska fed on five pounds of alfalfa and one pound of corn a day; brood sows through the winter that were better lookers and had larger litters than brood sows kept here at three times as much cost. Feed your hogs alfalfa during the winter and save your corn and use the corn to better advantage. As we progress in the breeding business we find that we can grow corn that will approximate more and more each year the feeding value. That is, that we will by and by grow corn with about sixteen per cent protein. Alfalfa will produce a hog with more bone, more muscle, more vitality and better able to withstand the hardships of our climate than corn. It is my advice to you, rotate your corn properly, keep land in good condition. You will all be happier because high-priced land has made you better farmers than it has in the past. Land is going to get higher because man is greater than the farm, greater than the animal, and is the biggest thing on the farm.

We were talking this evening about how to deal with hog cholera on the farm and I do not wish to be misunderstood. If I knew that there was cholera on the farm I would send for the butcher and have him take all of the brood sows with him. He knows when he takes them that if they have cholera he will lose money on it. You save something in caring for the fragments. You decrease the intensity of the disease. It would be possible to entirely throw off the genuine hog cholera if farmers would get rid of hogs in advance. If a breeder, don't sell your stock. My rule was to give notice to all buyers that females are for sale and under this guarantee, that if within thirty days they die they are my hogs and if they do not die they are their hogs and they send the money. I think this policy would help a great deal if carried out and would be no violation of the law. No man wants to sell hogs that have cholera.

The farther west the richer the alfalfa. And perhaps I should say here that you should have less of the protein contents. Why not have a clover pasture? You ought to have it, too, but you will get your alfalfa quicker and it will put better bone in your hogs. Use it for winter feed and you will be surprised what a nice crop of pigs and fine brood sows you will have. Rape is not as good as alfalfa, but it is good. It can not be grown as quickly. I think it is a splendid good thing. Blue grass pasture is hard to beat. Get a blue grass pasture and run your hogs, but have a few acres for brood sows and small pigs. Alsike is good on wet land, and once in awhile you get a seed crop that is almost as valuable as the land.

The corn section raises the bacon for the world, but the bacon that brings the highest price in the market you do not raise and you won't raise it with corn. Use alfalfa. Hogs grown in Dakota, Canada and Minnesota will gain a higher price, judging by the tests that are made, than the hog that is raised on corn. An Irishman raises his pigs on what is left of what the children eat, and what is left of the skim milk after the children are through and then he gives him some corn—not very much. But the Irishman does not eat his own pigs. He sells them to the man that has the price and he goes and buys American pork. It is worth more per pound for him than his own. But the man who lives indoors wants the Irish meat that is lean and has not so much fat. We grow the lard for the world and it will be grown as long as we get the cheap corn. We grow the pork for the laboring man. If he has to work hard the fat meat keeps up the energy and muscle and that is what he needs. Pork is sometimes shipped over to Belfast and fixed up for Irish pork, but men who use it say that the Irish bacon is best. I have to give up that the Danish and Irish bacon is better.

The aftermath of this talk led Mr. Munson to say:

I have four pastures. One is blue grass, clover and timothy. My pigs run in that at will. I have three small pastures that I plow up about the first of April and put oats and rape in. The hogs can not keep out of that pasture. I have never told you before that my hogs run in rape up to their backs. I let you guess that. If you don't give them corn you have to give them that. I have yet to have the first hog that had a sore ear in rape. I believe it is the smartweed and dog fennel that make sore ears. You will find that when the dew is on the smartweed if you rub it on your hand it will burn and I believe if there is none of it in the rape field the hogs will not have sore ears. The gate is always open and they go in when they want to.

Further discussion of the rape problem brought out statements from different men, that, "Oats and rape are hard to beat;" "Professor Shaw and Professor Carlyle say they never heard of rape causing sore backs or sore ears;" "I have raised rape for five years and have never had any ill effects."

## THE TYPICAL CORN FOR FAT.

On the subject of "The Typical Corn for Fat," H. C. Strater, of Monroe, Iowa, said:

The typical corn for fat requires a typical seed, a typical seed bed and a typical cultivation. To begin with, in providing this typical seed, I would select the seed in the fall before hard freezing, and place the corn in a room where it does not freeze, keeping it there until thoroughly dry. I would select ears from ten to twelve inches long, with eighteen or twenty rows to the ear, with good depth of kernel, and kernel holding its width and thickness from cap to cob, the caps to be finely dented and the kernels to be uniform size after the tips and butts are taken off. The ears should be of uniform thickness. I would avoid too large a cob or too small a cob. as well as too large or too small kernels. I would not want a sleek or flinty corn.

Having selected a good, strong seed, the next thing is the typical seed bed. I would plow in the fall if stubble, or as early in the spring as possible, so all the weed seed would start to growing before planting time. The last of April or first of May I would disk my corn ground at least twice, and then I would harrow (not drag, as I must say there is too much dragging done and not enough harrowing). Having a good and uniform seed bed, the next thing is to look after the planter and see if it is in good order. If necessary it is better to spend a whole day to see that the plates are adjusted so as to drop a uniform number of kernels. I would prefer 300 kernels to 100 hills. As to depth of planting, I prefer three inches. If you have good strong seed and a good seed bed, do not be afraid to start the planter about the 5th of May, even if it is a little cool. I have never known strong seed, planted not over three inches deep, to fail. I would choose a kind of corn that matures in 110 days I would consider this a typical corn for fat. I find that the average yield of corn for the State of Iowa is about thirty-two bushels per acre. I am certain that with a little care and better cultivation it could be increased to forty-two bushels per acre.

## THE ST. LOUIS FAIR.

E. H. White, of Estherville, Iowa, the Iowa superintendent of live stock for St. Louis, was in attendance in the interest of that show and said:

I would like to meet any of the swine breeders that expect to show swine at St. Louis. I can give you the idea of the commission, if you would like to hear it, or can talk to you privately about it without taking the time of others who are not especially interested. Senator Harriman asked me to come and answer any questions that might come up in connection with the exposition. It is not necessary for me to enter into any lengthy discussion of the relation of Iowa swine breeders to the show. Swine breeders from other States are coming to St. Louis, expecting to see the best hogs from Iowa, and if we don't make an exhibit that is worthy of the State they are going to be disappointed. The show is from October 3d to 15th, but the grounds will be open for the reception of swine on September 29th. It is not definitely decided, but it is the expectation to pay the expenses of Iowa exhibitors from the time they leave home until they return. The expenses will be freight and expenses of a man in charge, with forage while at St. Louis. I don't know that there is money enough to pay all of it, but it will be done if there is money enough. Entries close for swine August 20th. It is the expectation of the commission to have some one representing them visit all the swine to be entered before it leaves home, so that if it is not accepted it will save transportation. The expenses will be paid of the stock that is accepted. There has not been any arrangement in regard to shipping, but if it is possible to combine and ship in that way it will be done.

A partial list of those in attendance is as follows:

G. A. Munson, Maxwell; F. F. Failor, Newton; C. L. Funk, Osceola; W. M. McFadden, Chicago; Watson B. Turner, Maxwell; O. W. Browning, Newton; W. Z. Swallow, Waukee; George S. Prine, Oskaloosa; H. C. Strater, Monroe; O. Osborn, Maxwell; T. B. Hammer, Des Moines; A. J. Lytle, Oskaloosa; L. H. Toberts, Paton; W. A. Jones, Van Meter; W. S. Hart, Panora; A. Baker, Colo; Joe Steward, Ames; Wilson Rowe, Ames; Charles Swallow, Waukee; George Kuhn, Des Moines; B. C. Marts, Polk City; A. M. Haggard, De Soto; C. C. Kiehl, Ladora; H. F. Avery, Hale, Mo.; Silas Igo, Palmyra; W. J. Tittsworth, Avoca; Ed. Wineland, Avoca; W. J. Rutherford, Ames; D. L. Howard, Jefferson; Barnett Wilson, Earlham; L. O. Burt, Valley Junction; T. C. Ormiston, Valley Junction; J. H. Watson, Madrid; Dr. Gay, Ames; E. H. White, Estherville; J. A. Benson, Primghar; Professor Holden, Ames.

# MEETING OF THE NATIONAL ASSOCIATION OF EXPERT JUDGES.

The annual meeting of the National Association of Expert Swine Judges took place in Des Moines, Iowa, June 15, 1904, with President D. L. Howard in the chair. In the absence of Secretary McTavish the duties of secretary were performed by C. C. Carlin, of Des Moines. Mr. Howard opened by briefly referring to the history of the association and predicting a new era of usefulness.

The Interstate Breeders' Association presented an invitation to meet with them at their annual session in February next, and it was accepted The talk of the previous meeting concerning a special meeting to take place at St. Louis during the swine show failed to result in any action. The committee appointed in 1902 to devise a more perfect means of applying score card practice failed to make any report, and the matter was not taken up.

The examination of candidates for certificates as expert judges, resulted in the granting of one certificate only. This was issued to G. A. Munson, of Maxwell, Iowa, on Duroc-Jerseys. The subject scored was a boar furnished by the Roycroft farm, of Des Moines. The examination on Duroc-Jerseys was also taken by T. J. Hitte, H. M. Yoder and S. R. McKelvie. The committee in charge were W. Z. Swallow, L. H. Roberts and W. A. Jones.

A Chester White boar, of November farrow, furnished by the State farm at Ames, was scored by G. A. Munson and S. R. McKelvie, under the same committee, and no certificate issued.

A Berkshire barrow, also from the State farm, was scored by T. J. Hitte, H. M. Yoder and S. R. McKelvie, and no certificate granted. The committee on Berkshires were L. H. Roberts, W. A. Jones, J. A. Benson.

No other breeds were scored.

Election of officers for the ensuing year resulted as follows:

President, D. L. Howard, Jefferson, Iowa; vice-presidents, Joe Steward, Ames, Iowa, and J. A. Benson, Primghar, Iowa; secretary and treasurer, W. D. McTavish.

Iowa Farm Scene.

# IOWA IMPROVED LIVE STOCK BREEDERS' ASSOCIATION.

## PROCEEDINGS OF THE THIRTY-SECOND ANNUAL MEETING.

### OFFICERS OF ASSOCIATION:

| | |
|---|---|
| E. M. **Wentworth**, President | State Center |
| G. H. **Burge**, Vice President | Mt. Vernon |
| W. J. **Rutherford**, Secretary and Treasurer | Ames |

The thirty-second annual meeting of the Iowa Improved Stock Breeders' Association convened at Ames, Iowa, January 10, 1905, in connection with the Short Course at the Agricultural College. The evening programme was well filled with addresses by Dean Curtiss, Professor Guthrie, of the Ontario College of Agriculture, Professor Wilcox, of the Alabama Experimental Station, and others. At following sessions addresses were delivered by Hon. L. H. Kerrick, of Illlnois; Hon. H. M. Letts, of Iowa, trustee of the First District, and Dean Day, of the Ontario Agricultural College. The address of Mr. Kerrick was substantially along the lines of that delivered before the State Board of Agriculture and printed as part of their proceedings. The address of Dean Day follows:

### UTILITY IN STOCK BREEDING.

*G. E. Day.*

I wish to be understood as speaking in all sincerity when I say that it gives me great pleasure to meet with the stock breeders of this State. There is no class of men with whom I would rather meet than with stock breeders; there is no other business that appeals to me so strongly as the business of the stock raiser, and there is no pursuit that counts more in strengthening the very foundation of national greatness than the one in which you are engaged. You and I belong to different countries, and we see many things from different points of view, but today we meet upon a common ground; we meet, not as American and Canadian, but as lovers of good stock. "One touch of nature makes the whole world kin," and a genuine love of live stock comes very near to being that magic touch. I trust that I have struck the keynote of the purpose of this gathering, and that the single aim may be to upbuild one of the greatest industries of this country.

The business of the stock breeder is a peculiar one. The breeder has to deal with life, and all those mysterious possibilities that exist in the living creature have to be reckoned with in his operations. Stock breeding is not a mere question of cunning hands which model inert material to the whim of their owner; the really great breeder must possess an intuitive genius that can pierce the curtain of mystery surrounding living creatures, lay hold of those hidden forces, and so direct them that the result is a creature approaching very closely to the ideal he himself has set up. In short, the breeder is not a mere imitator, he is a creator.

I have stated that the breeder sets up his own ideal, and I should like to emphasize this point. There can be no progress unless the breeder has a very clear ideal before him toward which he is working. He may never reach his ideal, but he must never lose sight of it. No matter how much money may be invested in the enterprise it will come to naught if the breeder has not a clearly defined object in view. He will meet with many things to try his faith, but he must not waver; he will be frequently cast down, but he must not be discouraged. Difficulties, disappointments, and hope deferred are part of the heritage of the breeder, and he requires the highest class of courage to be able to stick to his guns and eventually bring victory out of what appeared to be certain defeat.

If it is essential, therefore, to have an ideal, we can easily appreciate the importance of having a correct one, and the question arises, where shall we look for guidance in our search for an ideal? History furnishes us many instances of breeders who made a mistake in this vital point, and, without exception, their work ended in a failure. Here is a man who stakes his all upon pedigree. It matters not how miserable the specimen, if its pedigree suits him, he will use it in his herd in preference to any other. Now, I do not wish to be understood as saying that pedigree is of no importance, far from it, but the man who considers pedigree alone is following a paper ideal, which will not stand the fires of public criticism. Here is another man who is afflicted with a color craze, and while color is certainly deserving of attention, it is possible to fix such arbitrary standards that incalculable harm may result. Another man makes the head the basis of selection. If the head does not exactly suit him the animal has no charms for him. To hear him talk one might think that the head was the only part of an animal that had any value. Now, the head is not without importance; it indicates character, trueness to type, quality, and, to a certain extent, constitution and feeding qualities. At the same time, it is a mistake to allow the head to obscure every other part of the animal; to condemn an animal because of a slight fault in its head, and give preference to one that is defective in a more vital point.

It seems to me that every breeder should ask himself why he is breeding the animals of his choice. Is it to humor the whims of the few, or to meet the demands of the many? If our work as breeders is to be a success, if it is to be a benefit to our country and a monument to ourselves, we must never lose sight of the requirements of the men who produce the market animal for the money that is in it. No matter how pure the blood, or how perfect the type from our own standpoint, if the animal does not meet all the requirements of the packer, if it is not suited to paying the rent and lifting the mortgage when placed in the hands of the average farmer, of what avail has been all our efforts. In short, the watchword of the truly successful breeder must be *utility*. Utility is the touchstone upon which each breeder's work will be tested. If our work stands the test, it will surely meet with recognition; if it fails in the test, it will ultimately disappear and be forgotten.

In setting up our ideal, therefore, utility is the first great requisite. In establishing our type we must admit nothing that will detract from utility. In selecting our breeding stock it must ever be uppermost in our minds. When we study pedigree, we must ask ourselves how much the blood lines represented in the pedigree are likely to enhance the utility of the stock we are breeding. Every step we take in our operations must be dominated by this one great consideration, and if we ever lose sight of the importance of utility we need never hope to have our names inscribed upon the roll of fame, which bears the names of the great breeders of live stock.

Utility must be viewed from two standpoints. The butcher requires an animal that will give him the largest proportion of valuable meat, and the farmer requires an animal that will reproduce its kind in profitable numbers, and make rapid and economical gains. There would be little use in aiming to please the butcher if the animal did not meet the requirements of the farmer; neither must we leave the butcher out of consideration if we would produce a really useful animal. In our breeding operations, therefore, we must keep both these men in view, and the breeding, feeding and killing qualities must each receive a due share of attention. I might illustrate this point by a reference to swine breeding in Canada. As you are no doubt aware, our conditions are such as to render it more profitable for us to produce what is known as the bacon hog. Now, one important feature of a bacon hog is the length of side, but it is only one thing out of a number of requirements. Some of our men, however, have allowed this one point to run away with their judgment, and in their effort to secure length they have sacrificed constitution, feeding qualities, muscular development and general quality. I am sorry to say, also, that there are judges that will hang the first-prize ribbons on these slab sided, narrow-chested, long-legged, coarse-boned quality-lacking brutes simply because they possess length. Then we have men who run to the other extreme and think that in order to have an easy feeder they must have a fine-boned, short-bodied, fat-backed, heavy-shouldered, thick-necked tubby little pig, utterly useless for bacon purposes. It is not my intention to enter upon a description of the ideal bacon hog, but I should like to point out that both of these men have lost sight of utility. The first has sacrificed nearly all that a feeder requires, and a good deal of what the packer requires; whereas the other has sacrificed nearly all that the packer requires and a good deal of what the feeder requires, because a really desirable bacon hog is also a good feeder's hog.

No doubt it will occur to some here to ask: "What are the indications of utility?" I should like, therefore, to make a few suggestions in this connection, and I would mention the following as among the evidences of utility:

1. CONSTITUTION.—Without constitution progress is impossible. Constitution is indicated mainly by width and depth at the heart. A broad shoulder top does not necessarily indicate constitution, but we must look between and back of the fore-legs. Muscular development is also important, and a broad forehead and a good-sized bright eye are other indications of constitution.

2. QUALITY.—This is important from both the breeder's and consumer's standpoint. I like to see strong, clean, flinty-looking bone in the legs. The extremely fine bone for which some breeders are aiming has little to commend it. There is a relationship between bone and muscle, and when the bone is reduced beyond a certain point it results in a carcass that contains entirely too much fat for the amount of lean. Either extreme is undesirable, and it is better to aim at a happy medium. The undue reduction of bone also tends to reduce size and lessen fecundity. Other points under quality are general smoothness of form, thickness and evenness of fleshing, mellowness of skin and fineness of hair.

3. FECUNDITY.—This is a point that is frequently overlooked, and yet it is one of prime importance. These little, short-bodied, fine-boned, roly-poly animals are rarely prolific mothers. The good breeding female must have a good-sized, roomy frame, and this calls for a fair share of bone. Coarseness is undesirable, but strength of bone and a good length of body are absolutely essential. The mammary glands should also be well developed.

4. GENERAL CONFORMATION.—In general appearance the animal should show a proportionate development of the different parts, and it should meet the requirements of the butcher and the consumer by carrying flesh of the right kind and possessing large development of those parts which have the highest market value.

5. CHARACTER.—This is something that is hard to define, and yet the experienced breeder can recognize it at a glance and knows its importance. It implies conformation to the best type of the breed, but it goes still further. Character in the male implies a bold, impressive carriage and general appearance. He is a male, and he shows it at every point and in every motion. In the female we look for the reverse. She should be dignified in her carriage, but there is a femininity about her general appearance and bearing which indicates a prolific and indulgent mother.

6. PEDIGREE.—A good many people are inclined to look upon pedigree as something distinct from utility. I can not fall in with this view when breeding animals are under consideration. I have already referred to the man that follows a paper ideal, but there is another man who sneers at pedigrees, and his case is not much better than the other. I have frequently been asked which is of greater importance, individuality or pedigree? The question does not admit of a definite answer, for it is largely a question of degree, but I can say that neither is complete without the other; that is to say the desirable breeding animal should possess individual merit as well as good pedigree. If the pedigree of a good animal contains the names of a

number of animals noted for the excellence of their progeny from a utility standpoint, then such a pedigree is a strong indication of utility in the animal in question, because the tendency is for ''like to produce like.'' Unfortunately, however, there are always some degenerate offspring from the most illustrious parents, and to breed from a degenerate merely on account of its pedigree would not be holding the proper balance between pedigree and individuality. It is right here that we encounter one of the greatest difficulties in breeding, and perhaps I may be pardoned for using an illustration which is familiar to many of you for the purpose of emphasizing my argument for utility. Thomas Bates was a skillful breeder of Shorthorn cattle. He was a staunch advocate of utility, and built up a herd whose fame was world-wide. When he passed from the scene, certain wealthy men got possession of representatives from some of his choicest families. Utility was cast to the winds and pedigree became the rage. Fabulous prices were paid for pedigrees and the merest excuses for Shorthorns that went with them, until some of the best Bates' tribes were nearly ruined. In the meantime a canny Scotch Quaker began breeding Shorthorns up in Aberdeenshire. Amos Cruickshank knew how to value a pedigree, but he wanted something more. He aimed to produce a quick-maturing, thick-fleshed beast that would help the tenant farmer pay his rent, and he stuck to his job in spite of the ridicule heaped upon the so-called plain Scotch cattle by the breeders of fashionably bred sorts. You all know the ultimate result: Utility carried the day, and the despised Scotch Shorthorn climbed to the topmost rung of the ladder of fame.

Thomas Bates is dead, but his name still lives. But what of those who lost sight of utility and went mad over pedigree? Nobody knows or cares what became of them or of their cattle. Amos Cruickshank's work is over, but his name will endure as long as Shorthorn cattle are bred, and why? There is only one answer, he was a man who succeeded in evolving a useful type of cattle

In this great country you have the names of many men upon the breeder's roll of fame, men who have bred horses, men who have bred cattle, men who have bred sheep and swine. Many of these men are living today, and probably some of them are before me now. I ask you to delve down to the foundations of the monument they have erected by their works and you will find, supporting the whole structure, the bedrock, utility. Let us, as breeders, cast fads and fancies to the winds, and let our watchword be utility first, utility last, utility always.

At the business meeting it was decided to request the State Board of Agriculture to grant a suitable place, the live stock pavillion preferred, for an evening programme during the week of the State Fair, when a programme will be presented of special interest to the breeders and exhibitors of show animals. Dean Curtiss, Professor Rutherford and the president were appointed a committee to consult with the State Board in regard thereto.

On motion the meeting adjourned until Thursday of State Fair week.

Farm Scene, Cherokee County, Iowa.

# PART IV.

## PROCEEDINGS OF THE
## TWENTY-EIGHTH ANNUAL MEETING
## OF
## THE IOWA STATE DAIRY ASSOCIATION

HELD AT MASON CITY, IOWA, FEBRUARY 1, 2, AND 3, 1905.

### OFFICERS FOR 1905.

| | |
|---|---|
| S. B. **Shilling**, President | Mason City |
| W. B. **Barney**, Vice-President | Hampton |
| P. H. **Kieffer**, Secretary | Manchester |
| F. M. **Brown**, Treasurer | Cedar Rapids |

### ARTICLES OF INCORPORATION OF THE IOWA STATE DAIRY ASSOCIATION.

We, the undersigned citizens of the State of Iowa, whose names are subscribed to these Articles of Incorporation, have associated ourselves together for the purpose and upon the terms and by the name herein stated under and in pursuance of the laws of the State of Iowa.

First.—The name of this corporation shall be the Iowa State Dairy Association.

Second.—The purpose for which this corporation is formed is to promote the dairy interests within the State of Iowa and everything pertaining thereto and connected therewith.

Third.—The principal place of business of this corporation shall be in the city of Des Moines and State of Iowa.

Fourth.—The duration of this corporation shall be fifty years from and after the acknowledgment and recording of these Articles of Incorporation, unless sooner dissolved by a majority of the members of this corporation.

Fifth.—There is no capital stock, nor are there any shares of stock in this corporation.

SIXTH.—The officers of this corporation shall be one president, one vice-president, one secretary and one treasurer, who shall be elected at the annual meetings of this corporation from the members thereof, and whose powers, authority and duties shall be fixed by the by-laws of this corporation.

SEVENTH.—The names of the officers of this corporation for the ensuing year are as follows, namely: President, O. T. Denison; vice-president, Peter G. Henderson; secretary, C. L. Gabrilson; treasurer, S. H. Sibley.

EIGHTH.—That the private property of the members of this corporation shall be exempt from corporate debts.

NINTH.—Fees for membership and annual dues for membership will be assessed as the corporation by its by-laws shall determine, which fees and dues will be applied for promoting the purposes for which this corporation is formed.

Dated at Waverly, Iowa, November 12, 1891.

O. T. DENISON, S. H. SIBLEY,
A. C. TUPPER, E. C. BENNETT,
W. L. NEWTON, C. L. GABRILSON.

# BY LAWS OF THE IOWA STATE DAIRY ASSOCIATION.

### NAME.

SECTION 1. The name of this Association shall be the Iowa State Dairy Association, as provided by the articles of incorporation filed with the Secretary of State.

### OFFICERS.

SECTION 2. The officers shall be president, vice-president, Secretary and treasurer; said officers constituting the executive committee.

### ELECTION.

SECTION 3. All officers shall be elected by ballot. A majority vote of the membership present shall be required to constitute an election; said election being a special order of business at 11 A. M. Thursday session of the convention. Their term of office shall be for one year from the first of January following.

SECTION 4. The place of holding the annual convention shall be selected and the date fixed by the executive committee, said committee to be composed of president, vice-president, secretary and treasurer.

SECTION 5. That every butter maker who attends the convention shall be expected to send or bring one package of not less than twenty pounds of butter from the factory where he is employed at the date of convention, same to be sold by the Association and the proceeds thereof to be used to pay express charges and membership fee of the exhibitor, the balance to be donated to the Association. And that there be but one class of creamery butter recognized in the contest of the exhibitors at the convention of this Association which shall include both separator and gathered cream.

### MEMBERSHIP.

SECTION 6. Any person may become a member of this Association upon the payment of a membership fee of $1. The annual dues shall be $1, payable to the treasurer on or after January 1st of each year. Said dues must be paid before any member can become an exhibitor or exercise the right to vote.

### COMMITTEES.

The president shall appoint the following committees of three members each:

*Reports.*—To whom shall be referred the annual reports of the president and secretary.

*Resolutions.*—To whom shall be referred all resolutions, without debate.

*Finance.*—Whose duty shall be to audit the accounts of the secretary and treasurer; to report at the evening session, Thursday.

*Legislature.*—Consisting of five members, of which the president and secretary shall be ex officio members, to co-operate with our dairy commissioner and similar committees for our sister states, for the advancement of the dairy industry.

The Iowa State Dairy Association met in annual session in the opera house at Mason City, February 1, 1905, at 7:30 o'clock P. M., President S. B. Shilling in the chair.

THE PRESIDENT: I wish to make a statement preliminary to the opening of this meeting, and that is that we have strangers enough in the city to fill this hall if we could get them all here. We do not want the citizens of Mason City to think this is a representation of the people attending this meeting, because, as I said before, if the dairymen in the city were all present this hall would not hold them.

It is needless for me to make any explanation about the aims and objects of our meeting, and, as the programme is quite full, we will commence it immediately by a prayer by Rev. F. W. Parsons, of Mason City.

## PRAYER.

### REV. F. W. PARSONS, MASON CITY.

Let us pray. Almighty God, our bountiful Father, Thou art the giver of every good and perfect gift; Thou art the creator and savior of this great universe; Thou dost hold in charge this world in which we live; Thou dost take heed of all our affairs; there is nothing too great for Thee, neither is there anything too small for Thy notice; everything Thou art interested in, and Thou hast so made us that we are constantly seeking for that which is better. We thank Thee for this characteristic that belongs to humanity. We thank Thee that Thou has created us, that Thou hast given to us this inquiring mind and this desire of the heart that causes us to constantly look into the future and plan for large and great things, to strive in every possible way to better our conditions, and we feel, Oh God, that Thou are interested in this attempt upon our part, because Thou has so decreed. Thou dost care for all Thy creation, and Thou dost foster every attempt on the part of humanity to raise up into a larger and broader and higher light.

We thank Thee for the work that this society is doing; we thank Thee for their great deeds, for their outward and upper look; we thank Thee for all the improvements they have caused, for the improvements they are constantly seeking. We rejoice in all this movement of humanity. We rejoice, especially, in the movement of this organization and, here in the beginning of this convention, we come into Thy presence; we bow in humble acknowledgment of the great God whose dominion we acknowledge, whose sovereignity we honor and praise. In God we trust; unto Him we give homage. Glory, and dominion and power be unto His great name.

We acknowledge Thee in all Thy ways. We have read in Thy book that Thou wilt direct our paths; we realize that we can not accomplish anything without Thy help. We rejoice that we are workers together with God. God causes the sun to shine on the earth; God causes the rain to fall in the proper season; He gives to us the snow; He gives to us all those things that do their part toward the earth bringing forth; He has, as it were, taken us into partnership with Himself. He has caused us to plow the ground and cultivate the crop in order that the soil may produce bountifully; He has caused us to study so we may know how to improve the herds and the flocks, and so we are workers together with God.

We acknowledge Thee, Oh God, in all our ways; we gladly acknowledge all Thy blessings, for every perfect gift cometh from the Father of All, from whom there is no shadow of turning. We rejoice in this great fact, the laws of nature can not be violated or turned, but as we conform to these great forces of nature and her laws so do we improve our condition. We praise Thee that Thou hast given us a mind to seek the forces of nature and understand their ways and methods of working.

Let great and eternal good, our Father which art in Heaven, we pray Thee, rest upon these men in all their inquiries, in all their deliberations, in all their toil, in all their work. Great God and good, with earnest faith we ask this blessing of Thee, and we are quite sure Thou will grant it to us, for man never looked upward, man never took a step in advance, but Thou dost lend approving smile and give a helping hand. So we ask Thy blessing upon this convention, the men organized for the purpose of improving the condition of humanity everywhere. Hear and accept of our gratitude, our Father; hear and accept of our prayer that we offer Thee in the name of Jesus of Nazareth. Amen.

THE PRESIDENT: We will now hear an address of welcome by Mayor Norris, of Mason City.

## ADDRESS OF WELCOME.

### HON. F. M. NORRIS, MAYOR MASON CITY.

Mr. President, Ladies and Gentlemen—A good many years ago, I think perhaps twelve or fifteen, it was my pleasure and my privilege to attend a meeting of the Iowa State Dairy Association held in Waverly. Another honored citizen of Mason City, Mr. O. T. Denison, if memory does not serve me wrong, was president of the association at that time, giving to his work faithful and highly successful efforts. Prof. W. A. Henry, of Madison, Wis., just entering his great fame as student and teacher, and investigator; Governor Hoard, of Wisconsin, whose memorable address upon that occasion will never be forgotton by those privileged to hear it; James Wilson, whose marvelous work as secretary of agriculture has never been equalled in the history of this country, and others of more than state-wide reputation contributed to the success of a meeting of men, whose meeting meant then as now a great deal to the State and to the Nation.

There was another man there; he was young but that misfortune was mitigated, so far as may be with a modesty and sincerity which have never departed, by the pride and satisfaction which we feel in the work which has been done for agriculture in its allied interests and for Iowa by Prof. Charles F. Curtis, of Ames, for the work done in those intervening years has resulted in the record of success made by our State; it has had to do with the production, the manufacture, the sale, the distribution of one of the most valuable of the products of the Iowa farm; and has had to do with the development, the enactment and the enforcement of legislation for the protection of this product. It has had to do with the financial welfare and success of literally hundreds of thousands of men and women who have found in the milky way the road to financial independence, and in fine, to that way that has contributed so much to the material welfare of the State.

So now it only remains for me to bid you welcome. I can wish you no greater success than to express the wish for the association that this meeting of the association may be as successful as the meetings which have preceded it. I can wish you no greater success than that the association may continue to improve up to the full standard of its responsibilities and opportunities.

Mr. President, I thank you.

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THE PRESIDENT: We are unfortunate in the fact that the weather is against us and, consequently, Mr. E. M. Wentworth, of State Center, the man who was to respond to the address of welcome, is not here; he is delayed at Marshalltown and will probably be here inside the next thirty minutes; but he dictated a response to the address of welcome, over the telephone, which was taken by the stenographer, and his right-hand man, Mr. Scott, will read it.

I have the pleasure of introducing to you Mr. Scott.

MR. Z. D. SCOTT: Mr President, Ladies and Gentlemen—As your president has stated, Mr. Wentworth telephoned from Marshalltown this afternoon that he was delayed and would not be here in time to respond to the address of welcome, so he telephoned a few remarks, which I take pleasure in reading to you.

## RESPONSE TO ADDRESS OF WELCOME.

E. M. WENTWORTH, STATE CENTER.

(Read by Mr. Z. D. Scott.)

*Mr. President, Ladies and Gentlemen*—The Iowa State Dairy Association holds no higher honor than is conveyed in your words of welcome; its members have no greater pleasure than the privilege of again meeting within your hospitable city. We share your pride in this beautiful city; this association has twice chosen its president from your citizenship, Honorable O. T. Denison, and the only Sam Shilling, each by energy and ability served honorably for three terms. Three times has the association been the city's guest; thus, for more than one-third of its life, the Iowa State Dairy Association and Mason City have touched elbows in the uplift of the dairy industry.

I found the other day the report of an early meeting, and, as I read the list of members, there rushed through my mind the poet's lament, "Oh, time and change! Alas how few are left of all that gallant crew." John Stewart gone, George Bull gone, Gates gone, Dexter gone, Antes gone, Fred Kimball gone, McErlain gone; but the manhood that marked their lives makes fragrant their memory.

> "There is no death, men come and go,
> And with their little fruitage wax and wane;
> But till the final sunset glow and the last mountain fane,
> Till burnt and bleak the sweet fields lie and pine dissever
> All light from life on earth forever,
> These voices in the sky shall sunlight be—and starlight."

I chanced upon an old programme, so old I doubt if you recall it, Mr. President, the striking feature, "Larboard Watch," by Dexter and Lumbard. We miss the bluff greeting that typified the sailor ancestry of C. F. Dexter; may the whistling winds and roaring waters he so loved in life sooth his slumbers. The kindly heart that beat beneath that rough exterior, the ready wit that illumed the rugged character, are more and more appreciated with the passing years.

So I can see tonight in that fairer land, in that city not built by hands, not Dexter alone, but Stewart, and Gates, and Bull, Antes and Kimball, alike with attentive ear listening to your plaudits for the living, for the grand old man who is with you.

We thank you, sir, for the warmth of your welcome. We know it is good to be with you.

THE PRESIDENT: We are forced to vary our programme a little, and the next man who will appear before you is one who does not need an introduction at my hands to anyone attending the meetings of the Iowa State Dairy Association. The fact is that an Iowa State Dairy Association meeting would not be complete without the presence of Mr. Jules Lumbard. In twenty-two years he has only missed one association meeting and he declares that as long as he can come and get here he will never miss another.

I have the pleasure of introducing to you, although as I said before, he needs no introduction, Mr. Jules Lumbard, of Omaha.

## REMARKS BY MR. LUMBARD.

*Ladies and Gentlemen*—It is difficult to express in words the great satisfaction I have in finding myself once more in your midst, surrounded by friends of the old type. To a man of my years, who already treads the borderland of the great hereafter, pleasures come by reminiscence and recollection—he looks backward; and those recurring conventions help me to enjoy the past once more.

I thank you for your kind reception and I wish you a very successful and happy meeting here in Mason City, and another when you adjourn to that land of which I have just spoken in the hereafter and where the thermometer is expected to range somewhat higher than it does in Mason City tonight.

Solo by Mr. Lumbard, "Child of the King," and responded to encore by "Rosebush."

THE PRESIDENT: We will next have the report of the secretary, Mr. P. H. Kieffer.

## SECRETARY'S REPORT OF THE IOWA STATE DAIRY ASSOCIATION.

*Mr. President, Ladies and Gentlemen*—I have the honor to submit to you the following report in connection with the last year's meeting:

| | | |
|---|---|---|
| Received from contributions | $ 900.00 | |
| Received from advertising | 250.00 | |
| Received from booths in convention hall | 41.50 | |
| Received from sale of butter | 589.72 | |
| Total receipts | | $1,781.22 |
| Paid to treasurer, as per voucher on hand | $1,721.22 | |
| Balance on hand, belonging to contribution fund | 60.00 | |
| Total expenditures | | $1,781.22 |

### PRO RATA FUND.

| | | |
|---|---|---|
| Received from treasurer money for pro rata fund | | $790.00 |
| Paid, pro rata money, as per vouchers on hand | $786.80 | |
| Balance on hand in pro rata fund | 3.20 | |
| Total | | $790.00 |

| | |
|---|---|
| Total cash on hand, not turned over to treasurer | $ 63.20 |
| Balance in treasurer's hands | 569.81 |
| Total | $633.01 |

We, the undersigned auditing committee, have examined and checked the above report, with vouchers and bills in the hands of the secretary, and find the same correct as reported.

S. B. Reed,
J. T. Stanhope,
Committee.

On motion, duly made and seconded, the secretary's report was adopted as read.

The President: We will next hear the treasurer's report. I will say in explanation of this report that we are in receipt of a letter from the treasurer, Mr. Fred A. Leighton, that he is confined to his home in Des Moines with a bad case of erysipelas, and consequently can not be with us. The secretary will therefore read the treasurer's report.

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## REPORT OF F. A. LEIGHTON, TREASURER IOWA STATE DAIRY ASSOCIATION.

| | | |
|---|---|---|
| Receipts— | | |
| Balance left over from last report | $ 336.88 | |
| By cash, P. H. Kieffer | 1,106.65 | |
| By carpenter work | 41.50 | |
| By membership fees | 244.00 | |
| By Gude Bros., sale of butter | 573.07 | |
| Total | | $2,302.10 |
| Disbursements— | | |
| Gerahty & Co., badges | $ 60.00 | |
| Meridan Britannia Co., silver cups | 51.20 | |
| Lumber bill | 40.00 | |
| E. N. Cobb, bill | 31.88 | |
| A. N. Mobray, bill | 13.66 | |
| Mary G. McGoorty, stenographer | 25.00 | |

| | | |
|---|---|---|
| Jules Lumbard, bill | 5.75 | |
| Express on cups | .90 | |
| Professor Kennedy, expenses | 8.30 | |
| Wells-Fargo Express | 9.05 | |
| American Express | 20.16 | |
| Frank Brown, expenses | 38.70 | |
| F. A. Leighton, two trips to Waterloo | 9.70 | |
| Sam Shilling, two trips to Waterloo | 21.35 | |
| S. B. Shilling, convention expenses | 6.55 | |
| F. A. Leighton, convention expenses | 11.40 | |
| P. H. Kieffer, expense | 35.90 | |
| Engraving cups | 1.00 | |
| F. M. Brown, hotel | 15.00 | |
| Carriage for Governor | 3.00 | |
| U. S. Express | 18.75 | |
| Fred L. Kimball, envelopes | 4.50 | |
| Fred L. Kimball, programmes | 115.00 | |
| Delaware News | 18.25 | |
| New Hampton Gazette | 2.00 | |
| J. C. Dailey, bill | 75.88 | |
| G. L. McKay, scoring butter | 25.16 | |
| Four drafts | .40 | |
| Pro rate money to Kieffer | 790.00 | |
| One draft | .10 | |
| W. B. Barney | 4.10 | |
| P. H. Kieffer—salary $150.00 | 193.50 | |
| Creamery Journal, printing | 30.00 | |
| One draft | .10 | |
| Two drafts | .20 | |
| Mary G. McGoorty | 40.00 | |
| Draft | .10 | |
| Delaware County News | 5.75 | |
| Total | | $1,732.29 |

| | |
|---|---|
| Total receipts | $2,302.10 |
| Total disbursements | 1,732.29 |
| Balance on hand | $569.81 |
| Balance—Kieffer's hands | 63.20 |
| Total | $633.01 |

We, the undersigned auditing committee, have examined and checked the above report with vouchers and bills in the hands of the treasurer, and find the same correct.

S. B. Reed,
J. T. Stanhope,
Committee.

On motion, duly made and seconded, the treasurer's report was adopted as read.

THE PRESIDENT: We will now be favored with a song by Mrs. J. E. Moore, of Mason City.

Solo, "Daffodils," by Mrs. J. E. Moore, and response to encore.

THE PRESIDENT: We have something a little out of the usual this evening for a dairymen's convention, as Miss Lowe has kindly consented to favor us with a reading.

Vice-President Barney was called to the chair, and the President addressed the meeting as follows:

## PRESIDENT'S ADDRESS.

### S. B. SHILLING, MASON CITY.

*Mr. Chairman, Ladies and Gentlemen*—It is not my attention to stand before you for any length of time this evening in an attempt to make an annual address. I simply wish to crave your indulgence for a few minutes while we review what has been accomplished in the State during the past year, and the position in which we find ourselves in trying to elevate the dairy industry of the State.

I sat down beside Brother Wright a few minutes ago to get some ideas, as he almost always furnishes the subject-matter for my discourses when we are out together, but he rather put a damper on me this evening because the only thing he told me was that his feet were cold, and I took that as a hint that he did not want me to talk very long.

I am going to ask you, as I did one year ago, to pardon my seeming egotism when I again refer you to our financial standing. I believe that it must be as satisfactory to you as it is to me to know that this association, which a few years ago carried an indebtedness, last year came out with a balance of six hundred dollars or more to our credit. I believe we have arrived at a point where we can keep intact in the treasury the amount of money that belongs to the buttermakers. It may not be known to all of you, but the buttermakers contributed to this fund by donating a tub of butter, and it was the intention and has always been the wish of the officers of this association to have that amount of money received from the butter to go into the pro rata fund. Heretofore we have been compelled to use that money, and the buttermakers, with their usual generosity, have never objected, and we have always been able to return the amount to the treasury with a goodly sum added, but I believe we have now arrived at a point where we can keep intact the full amount that belongs to the buttermakers.

I wish for a few minutes to indulge in a few statistics. I will be brief about it because statistics are dry, but I think you will have no difficulty in arriving at the conclusion why I am giving you these statistics before I get through. In the first place I will give you statistics other than dairy statistics in Iowa.

The principal commodity of the farms in general in Iowa is corn. It brings in more money to the farmers, is worth more than any other crop; the value of the corn crop exceeds all others by a considerable amount. Last year over three hundred million bushels of corn were raised in Iowa, worth over one hundred million dollars. Next to the corn crop comes the oat crop at thirty and one-half millions (I get these reports from the weather and crop statistics of the State of Iowa); next is the hay crop at twenty-six millions; then down to the wheat crop seven millions; rye crop four millions, and barley and potatoes, I believe about the same; from that to rye at eight hundred thousand, and flax about seven hundred thousand. This is about the amount these crops were worth to the farmers of Iowa last year.

We manufactured in Iowa about one hundred and forty million pounds of butter—seventy-five million pounds shipped out of the State and sixty-five millions consumed in the State, making a total of one hundred and forty million pounds manufactured in the State of Iowa. This, at the average price of the State, is worth about twenty-eight million dollars. When I gave you the value of the corn crop I gave it all to you, excepting probably the corn stover as a by-product; when I gave you the value of the oat crop, I gave you its entire value excepting oat straw as a by-product. The make of butter last year was worth twenty-eight million dollars, and its by-products amount to a great deal more; that is skim milk, which is estimated by different agricultural schools and experiment stations, at all the way from twenty-cents to forty cents per hundred pounds. This adds five million dollars more to the value of the dairy products, which makes thirty-three million dollars as the value of the dairy product of this State. You see this is exceeded by nothing in the State except the one product of corn alone.

I am giving you these figures for this reason, that the people of the State of Iowa, the legislature of the State of Iowa, do not appreciate what this industry means to the State. I think if anyone were to go out and make the statement that the dairy products of the State exceeded anything raised in the State, with the single exception of corn, not one out of ten would believe him. Yet these are figures and these are facts. We have, in addition, over seventeen hundred thousand cows in the State of Iowa, worth around thirty million dollars; we have eight hundred creameries in the State of Iowa with their equipment, worth two million dollars more. If we could add to this the value of the calves, and give an accurate estimate of the value of the dairy industry of the State of Iowa, it would come very nearly up to the corn product of the State.

I am pleased to be able to say to you today that for the first time in the history of the State we have received somewhere nearly the amount of recognition and the amount of appropriation from the State last year that we are entitled to, and that our business warrants; and I am proud to stand before you and say that last year, at the last session of the State Legislature, we received more than we had for any ten years in the history of the State up to that time. We have been able to positively impress the legislature with the importance of this industry, and we were rewarded, as I stated before, to a greater extent than ever before.

I wish to give you these full particulars because I believe they will be gratifying to you, and I know will place us in a better position before you, because we must come before you with excuses why we have not been able to obtain any assistance for the State dairy association; but I think perhaps I can give you a full and satisfactory explanation as to that.

We first asked the legislature for an appropriation for a building upon the fair grounds—asked for an appropriation of $47,000 in connection with the agricultural department and the dairy department thereof. We asked for $47,000 appropriation, and the building was erected and stands as a monument and credit to the contractor, and also to the intelligence of Mr. John Simpson, secretary of agriculture of the State, who was so prominent in the work. While it is not my intention to criticise a public official, and probably Mr. Wright will take exception to my statement, I wish to say that in my opinion the space in that building allowed to the dairy industry is not commensurate with the value of the industry in the State and with the work they did to secure that appropriation.

In the division of the money for our exhibition at St. Louis, the dairy industry, ranking only second in value to anything produced in the State,—in the distribution, I say, of $120,000 appropriation that was made by the State legislature for the purpose of making a suitable exhibit, the dairy industry received the princely sum of $2,500. Representing the biggest industry in the State, with only one exception, we got $2,500 and with that amount of money were expected to make a suitable showing. Senator Ericson and myself had the privilege of going before the appropriation committee to endeavor to get that appropriation increased, and succeeded to the extent of $1,000, making a total of $3,500 to make a display at St. Louis, and afterwards by a ruling of the Attorney-General we were deprived of that $1,000 and after all only had the $2,500 to make the display.

We were up against Minnesota with, I believe, $8,000 to make a display; Wiconsin with $5,000 set apart; Illinois $4,000 set apart, and Iowa, with the biggest interest in the dairy business of any of those States, only had the sum of $2,500. As I said before, we considered that almost utterly impossible to make a showing that would be at all creditable, but we did the best we could and everyone connected with the exposition from Iowa donated his time. Those of you who were there know that we reproduced in butter the first creamery that was ever built in the State of Iowa; also reproduced the building of which every dairy student in Iowa today is so proud, the building that is being erected at Ames. In addition to that, we undertook, in a small measure, to honor the man who above everyone else should receive the credit of being the advance agent of the creamery industry in Iowa, I refer to Mr. John Stewart, the man who established the first creamery anywhere in the West, and the man whose picture today we are wearing on our badges as a mark of honor and respect. We reproduced all this, and in the windup we come out better than we had any reason to expect. While we are always willing to take off our hats to Minnesota and consider that in point of excellence they have outstripped us, so far as the exhibit at St. Louis was concerned (and I don't know who was to blame for this), we received just as much recognition at the hands of the Fair officials as did Minnesota, who spent $1,800 for sculpture work alone, while we spent $125, just as much as Missouri, because we received the same kind of medal that they did. In addition to this we received three out of the five cups offered for prizes at the exposition, three gold medals, thirty-one silver and six bronze medals, and we turned back $750 into the State treasury. Mr. Kieffer told me before I got up here not to tell that, that he was ashamed of it, but we did.

We next came before the legislature and asked for an appropriation of $4,000, for the purpose of getting another inspector for the State. Here is where I wish to say to you that that is how we came to be in the position with regard to point of excellence as compared to Minnesota. Minnesota has twelve inspectors, and how they have educated their legislators up to the point of giving them that number I don't know. We have been trying to for the last five years, and how Minnesota got their legislature to be as liberal as they did, is something we can not understand. They have twelve inspectors in the State of Minnesota with a smaller dairy industry than we have, and up to the first of July we had only one.

We went before the legislature and asked for an appropriation for securing another inspector and were successful in that. The matter was taken up by Representative Flenniken and Senator Newberry, who got the bill through, and the first of July last the second inspector commenced work.

MR. SLATER, of Minnesota: You should have asked for forty thousand instead of four thousand.

We next went before the legislature and asked for an appropriation for a new dairy school at Ames. Our building there had become so old that it was really a disgrace to the great State of Iowa, and especially to the great dairy industry of the State. We asked for $75,000; we were not bashful in the amount we asked for, but we succeeded in getting an appropriation of $45,000. We also realized that we are simply, so far as the experimental work at Ames is concerned, simply skimming the surface,—that is we know next to nothing of scientific milk production. At the same time that we asked $75,000 for a building, we also asked for money sufficient to buy and equip a dairy farm. The entire amount we asked for, I believe, was about $125,000.

I want to say to you that I am glad of an opportunity to do honor and justice to your representative and senator from Cerro Gordo county, Hon. Mr. Gale and Mr. Stanbery, who so valuably assisted the dairymen, not simply as votes in the ranks but as leaders, and I wish to say that I believe the dairymen of Iowa owe as much to Senator Gale as to any man in the legislature, with but one exception. We owe it to him because he was the foremost in the fight from the beginning.

We succeeded in getting the appropriation for the dairy farm; we got $22,000 and $7,000 allowed for its equipment, and we succeeded during the entire year in securing an appropriation to the dairy industry of $140,000, and this explains to you why we did not ask for any money for the State Dairy Association. The fact is we had been there so often that we took the advice of our friends and staid away, not but what we felt that we needed this, we feel that we are justly entitled to it, but we also felt that if we asked for anything nearly what we should have we would have been turned down, and, as the other things were so much more important, we concluded we would stay out and not ask for an appropriation for the State Dairy Association until the legislature got together again. And, while I am on the subject I wish to say that I want to impress upon you the necessity and importance of securing this at the next session of our legislature. Things have changed in the dairy business. Conditions are altogether different than they were fifteen or twenty years ago, the Iowa State Dairy Association is not like it was a few years ago. The fact is that with the rural telephone and the free rural delivery, bringing agricultural papers right to the farmer's doors every day, it is impossible to get hold of the dairyman unless we go to him. The man who a few years ago would cross the State of Iowa to attend a meeting of this kind we can not get here today, and the man who does come to a meeting of this kind clear across the State does not need instructing.

What we need in this State, and in this we are no different than other states, is to take the doctrine of good dairying to the people; we have to go into the farming sections of this country and preach this doctrine of good dairying. It has been my privilege to stand before thirty-two audiences of farmers in the State of Iowa during the last few months. It would be impossible for the officers of the Iowa State dairy department and the State Dairy Association to begin to fill dates we are asked to; in fact, half the demands made on the dairy department for speakers have had to be refused. We have realized, gradually, that the art of butter-making is a scientific one, and the buttermakers have gone so far in the work that any future work that is to be done must be done with the milk producers. We must get the farmers to raise the value, the quality, the grade of our butter, and this can only be done by calling meetings at schoolhouses, creameries and places of that kind, where we can get the farmers together. Two weeks ago it was the privilege of brother Kieffer and myself to hold a meeting in the depot in the western part of the State, nothing but a depot, and there was not a square inch left in the room after the people got in. This shows that there is an awakening in the interest of the dairymen; they are beginning to understand the necessity of improving their product, and that if they stay in the business they must do better than they have done heretofore.

A year ago when I stood before you at Waterloo, I made a statement that the dairy output of Iowa could be doubled without adding a single cow, and I have come to the conclusion, on investigation of the matter, that we can thribble it. From what I have learned during the past year and the different tests that have been made, I am confirmed in the opinion that if the dairymen of the State would go into the dairy business, go at it intelligently, we can thribble the amount of the output in Iowa without the addition of a single cow. It may be you will regard this as a rank statement, and possibly it is one, but in view of the tests that have been held I think it is possible. I will give one illustration at this time. Take the test at St. Louis, where in one hundred and twenty days the profit of a herd was thirty-nine dollars per cow above their feed. I would like to know if that could be done in one hundred and twenty days in Iowa? In Iowa the average amount from a cow today is only about twenty-two dollars, which is the best we can do unless we adopt better means of feeding than we have at the present time, so that it costs nearly that much to keep a cow. Now I am not going to branch out into the feeding business for we have an audience of buttermakers here, the dairymen being lacking, and I want to say a few more words to the buttermakers and then I will give away to Brother Wright.

A few years ago we established buttermakers' organizations. I do not believe that any move that has ever been made in Iowa has ever resulted in as much good as that; the foundation of the great interest in dairying in Iowa was started through those buttermakers' meetings. I am proud of the buttermakers' associations, I am proud of their exhibits. What does it mean to have one hundred and sixty-seven tubs of butter in the Armory tonight? It means that the buttermakers of Iowa are earnest in their endeavors to improve the dairy product of this State. If we could arouse one-quarter the same interest in the dairymen that we have in the buttermakers in Iowa, Iowa would not have to take second place to Minnesota or any other State.

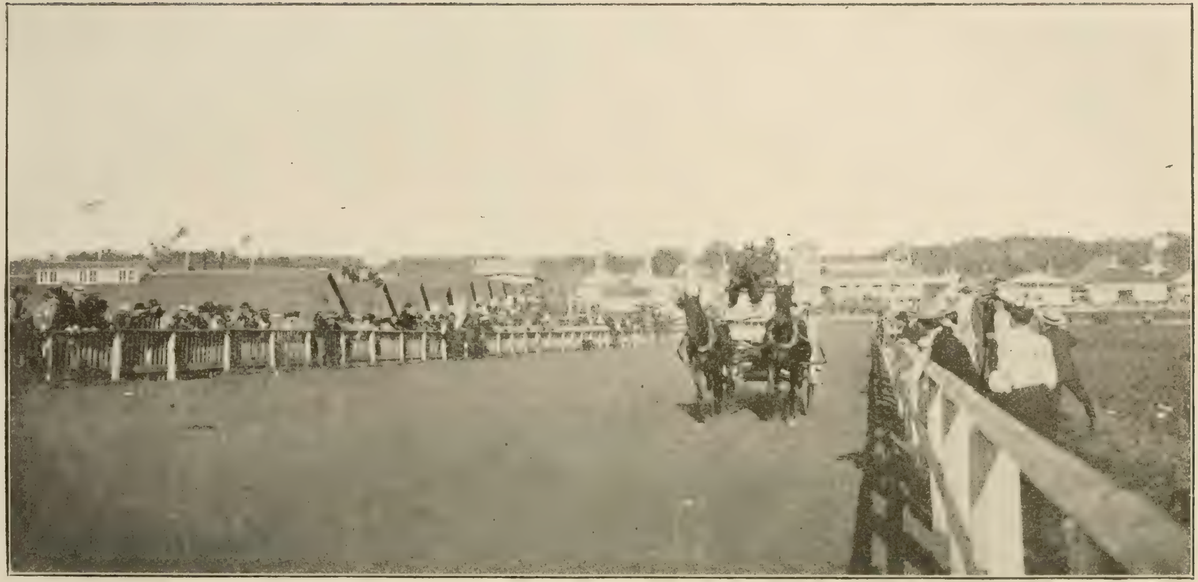
I want to urge the buttermakers to continue those meetings. Since the organization of those associations there has only been one that has not been a success, and the association is larger and stronger today than when we established it. The buttermakers of the State are the ones who have worked up the sentiment that called those meetings. I want to say to you that I believe with the assistance we have had in the last year, and I have every reason to believe it will be continued this year so far as the dairy department is concerned, we will work in harmony with you. We want you to know that if some of the three dairy departments do not attend your meetings it is not because we do not want to do so, it is simply because we can not spare the time, or our dates are taken. The State dairy school, the State dairy commissioner, of Des Moines, and his assistants have never refused an invitation to attend these meetings when possible to do so; and, so far as I am concerned, whenever it has been possible for me to go and meet the boys I have never failed to do so; and whatever conditions may exist in the future, it is my intention to do as I have done in the past.

Take these thoughts home with you and give more attention to the meeting; thou even in the past. If I were going to find any fault with you boys as buttermakers, it would be in this. I have always regarded it as a part of your duty to be an instructor as well as buttermaker. I believe that it should be in your province to fit yourselves, not only to be good buttermakers, but should fit yourselves in the lines of feeding and breeding, and become instructors to the dairymen of your community. As I said before, I would like to impress this upon you and have you take it home with you. The Lord knows I have no disposition to find fault with you, but I think if you are weak anywhere it is in that one place. While you are efficient in every branch of the manufacture of butter, you are deficient in the fact that you have not made the instructing of the dairymen a part of your study it belongs to you to post yourselves as much upon feeding and breeding as on buttermaking, and to take it right to your patrons.

I am not going to take any more time, except to say a few words of apology to the audience. This meeting was called for the Wilson Opera House, but we were forced to make a change in our plans on short notice, but hereafter our meetings will be held at the opera house.

In conclusion, I wish to say that our programme is very full and complete, and after today we will take up and dwell more particularly on dairy subjects. Some of the best speakers we could secure in the United States will be on the programme prepared to meet you. The next session for the dairymen will be tomorrow morning at 11 o'clock.

I thank you.



Des Moines fire team making exhibition run, Iowa State Fair, 1904.

VICE-PRESIDENT BARNEY: I have listened with a good deal of interest to our worthy president's remarks, and I have no doubt that you all enjoyed them. He has touched on many points that have been of interest to me, and I think they are of great interest to all of you.

We will now hear from Hon. H. R. Wright, Dairy Commissioner.

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## ADDRESS.

HON. H. R. WRIGHT, STATE DAIRY COMMISSIONER, DES MOINES.

*Mr. Chairman, Ladies and Gentlemen*—I appreciate the warmth of your greeting, but strict regard for truthfulness compels me to admit that my feet are still cold. At this late hour, after the lengthy remarks we have listened to, it appears to me that I might well take the advice of a man that Mr. Cownie was telling about the other day. I heard him tell one time of how they kept insane asylums and among other things he said they furnished amusement to the patients, and on Sundays had a minister come to preach. One day the preacher had preached perhaps an hour and had thoroughly tired out his audience; then he struck an attitude and said "what more shall I say?" A fellow back in the audience rose up and said, "don't say another d——n word."

I reckon if I took that fellow's advice it would be just the right thing to do, but it is not very often that I get a chance at the buttermakers except one at a time, so if you will stand for it a little longer, I will talk a little business. You know they put the dairy commissioner on every year just the same as the secretary's report and the president's address, and all that sort of thing; nobody expects to be entertained, or instructed, or pleased by anything he says, so I propose to spend a few minutes tonight in mapping out what the dairy department expects to do the coming year, and the reason I have for doing so is that we want to enlist the help of everybody interested in the business.

There are two or three things we hope to do, expect to carry out in some degree at least, and one of the minor things is this: We get at the food commissioner's office a lot of inquiries for buttermakers, and a few buttermakers write in and want us to find places for them. I might say that the curious feature of that is that nobody wants a forty or fifty dollar buttermaker; most everybody wants to pay good wages. So we have determined this year to advertise to buttermakers and the employers of buttermakers that we stand ready to put these two positions in communication with one another, that buttermakers may find where vacancies are and creameries may be put in communication with those wanting positions. That is one thing we expect to do.

Another thing to which we want to devote considerable attention is the local meetings Mr. Shilling has mentioned, and I want to ask buttermakers to assist us in arranging them. We know a lot of places that ought to be assisted, but buttermakers demand, in most cases, that we must arrange meeting, set date. etc. We believe there is a great future ahead of the dairy industry in this State, and we believe it is the business of the dairy department (both the dairy department of which I am the head and the dairy department at Ames) and the dairy association, to help the farmers and instruct them (if that is the right word), at any rate to push on the business along the right line.

So we propose to continue the meetings we have had which Mr. Shilling has mentioned. I think last year we had perhaps fifty or sixty such meetings, besides farmers' institutes. This year we hope to double that number. We have quite a force at our command, not only our department, but the school at Ames has three or four men who are good speakers; there are a number of men on the road in one capacity or another, Mr. Anderson, Mr. Nichols and Mr. Shilling, and some others from whom we expect assistance at those meetings.

And there is still a third thing which we are going to attempt, and from which we expect great things. You know there are about six hundred creameries actually in operation in Iowa. You know also there are two men whose business it is to circulate among those creameries and tender such assistance as they may be able. You can see it is impossible to get to even a majority of those creameries in a year. We propose, in order to help us to get State dairy inspectors to creameries that need the help, instead of letting them go out hit and miss or only when asked for, we propose to inaugurate a monthly scoring of butter, and we are confident that we will reach all the buttermakers interested in good butter in that scoring each month. We expect to have some of our boys score the butter, and other judges at other times, as many different judges as we can secure, so that we may have the advice and expert knowledge of all of those people to point out the faults in the butter. Of course the buttermaker will be informed of his record by mail, for we expect to use that largely to assist the dairy commissioner in getting to the fellow who seems to be needing the help the most and help him to raise the grade of his butter.

We propose to do this without other expense to the buttermaker than the expense he will be to in shipping his butter. We intend to hold the scoring about the first of each month, the exact dates to be announced later in the press. We intend to have some scorings at Manchester, probably some in this town and elsewhere. Scorings of that kind each month from now until this time next year, with one exception. That is the scoring for September, we will let the State Fair take the place of that. We want these scorings to be educational entirely, not giving prizes, gold medals, premiums, diplomas or anything else. We believe the fellow that is interested in raising the quality of his butter will go into this game without any reward at all at the other end in the way of medal or premium money or something of that kind, and the expense, other than the expense of the butter, will be extremely light, possibly nothing at all. We will sell the butter and remit to the owner of it. There will be no premium or prizes, except such as may be voluntarily awarded by somebody outside. We will have nothing to do with that. If anyone chooses to offer prizes, that is his affair.

We hope to make this as nearly educational as possible. We hope to then get next to the people whose butter can be materially improved, and assist him in improving it. The fellow that gets to the top is the fellow that does not recognize the top when he gets there, and we know there are a lot of buttermakers in the State who have very nearly or quite reached the top; there are another lot that might easily do that.

We believe that the decrease in the number of buttermakers and the inevitable clearing out of the poorer class of buttermakers in the State ought to raise the quality of the butter made in this State very materially. The number of creameries in this State has decreased perhaps a couple of hundred in the last three or four years, and at the same time the make of creamery butter in the State has decreased but slightly. The number of buttermakers has decreased considerably, but a curious feature is, that there is as much demand for good buttermakers as ever. There is no demand for poor buttermakers on the part of anyone.

So we think the whole butter business will be better. Money spent in the dairy commissioner's department will be spent in effort to increase milk production in the State, and also to raise the quality of butter. So for that reason we propose to do these things—to have those dairy meetings that have been mentioned and the scoring contests. And we do not only want to interest the buttermakers, but we want to interest the people who visit the creameries. There are a lot of fellows who do not attend these meetings; they are the fellows we want to get after. We do not want the biggest or best buttermaker, but the fellow who can be made better. That is the object of the work I have outlined.

THE PRESIDENT: I wish to appoint the resolution committee at this time. All the other committees I will defer until later. I will appoint on this committee, Hon. H. R. Wright, H. J. Neitert, W. B. Johnson.

We are going to read three or four of the highest scores before adjournment.

Everyone having railroad receipts will please hand them in to the secretary this evening if possible. The joint agent will be here in the morning to sign all we have, and we must have one hundred to get the reduced rate, so everyone will hand in his certificate.

Another thing—this association is largely supported by its membership. While it is hardly necessary for me to urge you to take out memberships, still I wish to say it is the principal source of our income, and I want to ask you not to leave the city until you become a member of this association.

Another thing, last year you will remember we read the scores the same as tonight. This was the first time we had ever done that, as we always considered that as soon as the buttermakers received their scores they were liable to go home. We want to give you all the instructions possible, and have made arrangements whereby Professor McKay will take you through the butter-room in classes the same as he did last year. Tomorrow morning we will commence the classes, and, owing to the fact that there are more buttermakers exhibiting than a year ago, the classes will be larger. Another thing, this year we have admitted the secretaries and managers of the creameries. We believed if they could get in there with their buttermakers and could be shown that the defects were not the fault of the buttermaker, it might be an incentive for the secretary to go home and take the matter up with the patrons and help in that way.

Now, from the fact that we are going to tell you the scores we do not want you to go home. You will remember we used to keep those scores back so as to make you stay. Now we put you on your honor and expect you to stay. There is one thing we appreciate, and that is that the intensely cold weather perhaps makes it imperative for some of you to go home earlier than otherwise would be the case. But we want you to stay through the sessions, because we guarantee the programme will please you.

Our constitution provides for the election of officers tomorrow, the middle day of the meeting. It will be held at the Wilson Opera House and I hope we will have a larger attendance than we have here to night. We also have one paper on for tomorrow morning.

After the secretary, Mr. Kieffer, has read the scores you may consider yourselves adjourned.

## SCORE IN DETAIL

### OF BUTTER EXHIBITED AT THE IOWA STATE DAIRY CONVENTION, FEBRUARY 1, 2 AND 3, 1905.

*Butter scored by Prof. G. L. McKay and P. H. Kieffer, assisted by W. S. Smarzo.*

| Name and Address. | Flavor. | Body. | Color. | Salt. | Package. | Total. |
|---|---|---|---|---|---|---|
| Abbott, Frank O., Mt. Etna | 40 | 25 | 14 | 10 | 5 | 94 |
| Anderson, M., Audubon | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Adams, A. H., Storm Lake | 38 | 25 | 15 | 10 | 5 | 93 |
| Allard, G. F. Newell | 38½ | 25 | 14½ | 10 | 5 | 93 |
| Armstrong, C. R., Plymouth | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Adams, L. C., Lone Rock | 38 | 25 | 15 | 10 | 5 | 93 |
| Bergsather, R. S., Northwood | 41 | 25 | 15 | 10 | 5 | 96 |
| Borland, G. W., Oelwein | 40 | 25 | 15 | 10 | 5 | 95 |
| Beach, C. N., Alpha | 40 | 25 | 15 | 10 | 5 | 95 |
| Brunner, Frank, Charles City | 39 | 25 | 15 | 10 | 5 | 94 |
| Banta, A. E., Wheatland | 39½ | 24½ | 15 | 10 | 5 | 94 |
| Brant, C. E. Fairbank | 39½ | 25 | 14 | 10 | 5 | 93½ |
| Buehrer, O. H., Alta Vista | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Bakken, G. A., Ridgeway | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Bullis, H. R., Cedar Rapids | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Bentz, A. H., Delhi | 39 | 25 | 15 | 9½ | 5 | 93½ |
| Brunner, J. J., Charles City | 39 | 25 | 15 | 9½ | 5 | 93½ |
| Baitinger, John, Ladora | 38½ | 24½ | 15 | 10 | 5 | 93 |
| Barker, J. A., Monona | 38 | 25 | 15 | 9½ | 5 | 92½ |
| Blood, Wm. E., Cedar Rapids | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Barlow, Iver, Calmar | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Bristol, G. A., Primghar | 37 | 25 | 15 | 10 | 5 | 92 |
| Burt, Roy S., Terril | 37 | 25 | 15 | 10 | 5 | 92 |
| Barkelew. W. S., Clarksville | 37½ | 25 | 14½ | 10 | 5 | 92 |
| Balfang, Henry, Rockwell City | 36 | 25 | 15 | 10 | 5 | 91 |
| Capper, C. H., Westgate | 41½ | 25 | 15 | 10 | 5 | 96½ |
| Crabb, W. R., Greeley | 39½ | 25 | 15 | 10 | 5 | 94½ |
| Clark, T. A, West Bend | 39½ | 25 | 15 | 10 | 5 | 94½ |
| Carr, Cecil E., Frederika | 39½ | 25 | 15 | 10 | 5 | 94½ |
| Churchill, B. R., Royal | 39½ | 25 | 15 | 10 | 5 | 94½ |
| Conway, C. R., Garner | 39 | 25 | 15 | 10 | 5 | 94 |
| Christensen, Adolph, Jesup | 39 | 25 | 15 | 10 | 5 | 94 |
| Crocker, H. M., Alta | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Cagley, J. W., Nashua | 38 | 25 | 14½ | 10 | 5 | 92½ |
| Colbert, H. H., Menlo | 37 | 25 | 15 | 10 | 5 | 92 |
| Cochrane, A., Stuart | 38 | 25 | 14½ | 10 | 4½ | 92 |
| Capper, Ed, Devon | 38 | 25 | 13½ | 10 | 5 | 91½ |
| Doleshal, A. J., Bancroft | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Dawson, J. F., Masonville | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Durkee, A. F., Denison | 38 | 25 | 15 | 10 | 5 | 93 |
| De Hoogh, D. J., Boyden | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Dahlen, N. O., Tenold | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Davis, C. W., Ashton | 36½ | 25 | 15 | 10 | 5 | 91½ |
| Driver, D. L., Burt | 36½ | 25 | 15 | 10 | 5 | 91½ |
| Enveldsen, M. E., Gilbertville | 40 | 24½ | 14½ | 10 | 5 | 94 |
| Erb, R. J., Arbor Hill | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Edwards, L. S., Lamont | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Elliott, Charles T., Cascade | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Evans, Elzie, Bradgate | 37½ | 25 | 14 | 10 | 5 | 91½ |
| Feldman, J. B., Dyersville | 39½ | 25 | 15 | 10 | 5 | 94½ |
| Forrester, H. E., Fredericksburg | 40 | 25 | 15 | 10 | 5 | 95 |
| Fisher, F. H., Greene | 39 | 25 | 15 | 10 | 5 | 94 |
| Frank, Ben, Titonka | 39½ | 25 | 14½ | 10 | 5 | 94 |
| Fjetland, G. M., Ellsworth | 39 | 25 | 14½ | 10 | 5 | 93½ |
| Finnegan, John, Jerico | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Farnham, J. E., Rockford | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Fisher, N. W., Mason City | 37½ | 25 | 15 | 10 | 5 | 92½ |

SCORE IN DETAIL—CONTINTED.

| Name and Address. | Flavor. | Body. | Color. | Salt. | Package. | Totel. |
|---|---|---|---|---|---|---|
| Frees, A. J., Cedar Falls | 37½ | 25 | 14½ | 10 | 5 | 92 |
| Fosse, O. A., Ridgway | 37 | 25 | 15 | 10 | 5 | 92 |
| Gudvangen, Eric A., Vinje | 41 | 25 | 15 | 10 | 5 | 96 |
| Gehrls, William, Germantown | 40½ | 25 | 15 | 10 | 5 | 95½ |
| Gibbs, L. J., Waucoma | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Goodrich, DeWitt, Goldfield | 39 | 25 | 14½ | 10 | 5 | 93½ |
| Goodnow, M. J., Correctionville | 38 | 25 | 15 | 10 | 5 | 93 |
| Hart, N. C., Providence | 39½ | 25 | 15 | 10 | 5 | 94½ |
| Heileman, Fred, Hamlin | 39 | 25 | 15 | 10 | 5 | 94 |
| Hadley, R. R., Zearing | 39 | 25 | 15 | 10 | 5 | 94 |
| Homan, E. H., Artesian | 39 | 25 | 15 | 10 | 5 | 94 |
| Herman, A. J., Maple Leaf | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Hessell, F. W., Waterville | 40 | 25 | 13½ | 10 | 5 | 93½ |
| Heathman, George, Plover | 38½ | 25 | 15 | 9½ | 5 | 93 |
| Helfter, G. L., Osage | 38 | 25 | 15 | 10 | 5 | 93 |
| Hansen, H. B., Dunbar | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Howard, F. E., Dale | 37 | 25 | 15 | 10 | 5 | 92 |
| Hoopman, E. A., Chester | 37 | 25 | 15 | 10 | 5 | 92 |
| Hicks, O. W., Guernsey | 37½ | 24½ | 15 | 10 | 5 | 92 |
| Hollenbeck, H. F., Wesley | 37 | 24½ | 15 | 10 | 5 | 91½ |
| Heffren, George H., McGregor | 35 | 25 | 15 | 10 | 5 | 90 |
| Iliff, B. C., St. Ansgar | 37 | 25 | 15 | 10 | 5 | 92 |
| Johnson, W. B., Arlington | 40 | 25 | 15 | 10 | 5 | 95 |
| Jensen, P., Exira | 38 | 25 | 15 | 10 | 5 | 93 |
| Janes, Fred, Charles City | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Jorgensen, Soren, Fredsville | 39 | 25 | 15 | 10 | 5 | 94 |
| Jensen, M., Harlan | 37 | 25 | 15 | 10 | 5 | 92 |
| Knudsen, Nick, Emmetsburg | 42½ | 25 | 15 | 10 | 5 | 97½ |
| Koneke, H. C., Hudson | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Kuennen, Ben H., St. Lucas | 38 | 25 | 15 | 10 | 5 | 93 |
| Kucker, Wm. D., Fairville | 38 | 25 | 15 | 10 | 5 | 93 |
| Kinsler, E. A., Durant | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Keachie, James L., Dexter | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Klemesrud, Sig., Osage, R. F. D. 2 | 39½ | 25 | 13 | 10 | 5 | 92¼ |
| Kinney, A. R., Ottawa, Minnesota | 38 | 24½ | 15 | 10 | 5 | 92½ |
| Knief, Geo. H., Minkler | 39½ | 25 | 13 | 10 | 5 | 92½ |
| Kindberg, A., Dike | 37 | 25 | 14½ | 10 | 5 | 91½ |
| Laird, S. W., Walker | 42 | 25 | 14½ | 10 | 5 | 96½ |
| Ladage, H. C., Buck Creek | 41 | 25 | 15 | 10 | 5 | 96 |
| Langquist, G. F., Saude | 40 | 25 | 15 | 10 | 5 | 95 |
| Landis, A. L., Colesburg | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Landis, George, New Vienna | 38 | 25 | 15 | 10 | 5 | 93 |
| Lehman, Fred, Coggon | 37 | 25 | 15 | 10 | 5 | 92 |
| Loomis, G. R., Dumont | 38 | 24¾ | 15 | 9¾ | 5 | 92½ |
| Martin, Harry, New Sharon | 39 | 25 | 15 | 10 | 5 | 94 |
| Miller, J. O., Milford | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Morck, Christ, Jewell Junction | 39½ | 25 | 13½ | 10 | 5 | 93 |
| McNary, H. L., Britt | 39 | 25 | 15 | 10 | 5 | 94 |
| McCaffrey, J. E., Earlville | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Nielson, J. P., Brayton | 40 | 25 | 15 | 10 | 5 | 95 |
| Nelson, B. S., Swea City | 39½ | 25 | 13½ | 10 | 5 | 93 |
| Nagel, W. J., Scarville | 38½ | 25 | 14½ | 10 | 5 | 93 |
| Odell, F. L., Greenfield | 39½ | 25 | 15 | 10 | 5 | 94½ |
| Opperman, H. H., Fairbanks | 38½ | 25 | 14½ | 10 | 5 | 93 |
| Pollard, L. A., Sand Spring | 39½ | 25 | 15 | 10 | 5 | 94½ |
| Peterson, P. N., Rake | 39½ | 25 | 15 | 10 | 5 | 94½ |
| Peterson, L. C. Story City | 39½ | 25 | 15 | 10 | 5 | 94½ |
| Post, C. C., Maquoketa | 39 | 25 | 15 | 10 | 5 | 94 |
| Peterson, S., New Hampton | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Pettibone, H. W., Fenton | 36½ | 25 | 15 | 10 | 5 | 91½ |
| Riley, Frank, Fostoria | 39 | 25 | 15 | 10 | 5 | 94 |
| Rohde, C. J., Manchester | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Remington, A. L., Ruthven | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Ross, J. J., Iowa Falls | 37 | 25 | 15 | 10 | 5 | 92 |
| Richards, Lewis, Forest City | 37½ | 25 | 14½ | 10 | 5 | 92 |
| Storvick, T. A., Lake Mills | 42½ | 25 | 15 | 10 | 5 | 97½ |
| Spohn, A. J., Miles | 41 | 25 | 14½ | 10 | 5 | 95½ |
| Squires, B. O., Manchester | 40 | 25 | 15 | 10 | 5 | 95 |
| Shettler, H. C., Baxter | 40 | 25 | 15 | 10 | 5 | 95 |
| Sheldon, D. E., Waverly | 39½ | 25 | 15 | 10 | 5 | 94½ |
| Soles, Byron T., Fern | 39 | 25 | 15 | 10 | 5 | 94 |
| Shellman, F. W., Ayrshire | 39 | 25 | 15 | 10 | 5 | 94 |
| Steussi, G., Thorpe | 38½ | 25 | 15 | 10 | 5 | 93½ |

SCORE IN DETAIL—CONTINUED.

| Name and Address. | Flavor. | Body. | Color. | Salt. | Package. | Total. |
|---|---|---|---|---|---|---|
| Smith, S. F., Columbus, Ill | 39½ | 25 | 14 | 10 | 5 | 93½ |
| Seim, Theodore N., Decorah | 39½ | 25 | 13½ | 10 | 5 | 93 |
| Snyder, A. W., Dickens | 39 | 25 | 14 | 10 | 5 | 93 |
| Schreiber, E., North Washington | 38 | 25 | 15 | 10 | 5 | 93 |
| Sorenson, Peter, Exira | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Saveraid, P. J., Huxley | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Stratton, G. R, Curlew | 37½ | 25 | 14½ | 10 | 5 | 92 |
| Stephenson, F. W. Dundee | 37 | 25 | 15 | 10 | 5 | 92 |
| Sherman, Frank, Fayette | 37½ | 24½ | 15 | 10 | 5 | 92 |
| Trimble, N H., Alden | 40 | 25 | 15 | 10 | 5 | 95 |
| Thuessen, Peter, Kimballton | 39½ | 25 | 15 | 10 | 5 | 94½ |
| Thomas, Guy, Goodell | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Talle, A. C., Northwood | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Tysver, L. M., Owl Lake | 37 | 25 | 15 | 10 | 5 | 92 |
| Teeple, J. J., Inwood | 37½ | 25 | 14½ | 10 | 5 | 92 |
| Taff, John M., Guthrie Center | 37 | 25 | 14½ | 10 | 5 | 91½ |
| Umbreit. B. W., Clarion | 37½ | 25 | 14 | 10 | 5 | 91½ |
| Vargason, E. M., Hazleton | 39 | 25 | 15 | 10 | 5 | 94 |
| Vind, A., Mitchell, S. D. | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Vanderham, C. H., Kanawha | 38½ | 25 | 14 | 9½ | 5 | 92 |
| Winter, Theo., Williamsburg | 41½ | 25 | 14½ | 10 | 5 | 96 |
| Wendt, H. D., Hopkinton | 41 | 25 | 15 | 10 | 5 | 96 |
| Wiese, R., Prairie Rose | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Walsh, Ed, Whittemore | 38½ | 25 | 15 | 10 | 5 | 93½ |
| Woodsworth, C. L. Waterloo | 37½ | 25 | 15 | 10 | 5 | 92½ |
| Wagner, Robert, Randalia | 38 | 24½ | 15 | 9½ | 5 | 92 |
| Wester, W., Hobart | 37½ | 24 | 15 | 10 | 5 | 91½ |
| Yant, O. P., Manning | 39 | 25 | 15 | 10 | 5 | 94 |
| Yorkshire Creamery Co., Ottumwa | 36 | 25 | 15 | 10 | 5 | 91 |
| Zubrod, J. M., Boyd | 37 | 25 | 15 | 10 | 5 | 92 |
| P. Wyman, Jacksonville | 37½ | 25 | 15 | 9½ | 5 | 92 |
| No. 2 | 31 | 25 | 14½ | 10 | 5 | 85½ |
| No. 1 | 34 | 25 | 15 | 10 | 5 | 89 |
| No. 10 | 36 | 25 | 13 | 10 | 5 | 89 |
| No. 6 | 32½ | 25 | 14½ | 10 | 5 | 87 |
| No. 164 | 34 | 25 | 15 | 10 | 5 | 89 |
| No. 149 | 33 | 23½ | 15 | 10 | 5 | 86½ |

T. A. Storvick, Lake Mills, wins gold medal, score 97½.

N. H. Knudsen, Emmetsburg, wins silver medal, score 97¼.

Meeting adjourned until eleven o'clock A. M. Thursday.

## THURSDAY, FEBRUARY, 2, 1905.

Meeting called to order at 11 o'clock A. M., by the president, Mr. S. B. Shilling.

THE PRESIDENT: Our session this forenoon, as you are aware, is for the purpose of election of officers. Our constitution provides for this, that on the middle day of the session at a certain hour, the election must take place.

THE VICE-PRESIDENT, MR. W. B. BARNEY: Gentlemen, the first thing is the election of president, and nominations are now open for the presidency. Who will you have for your future president?

MR. WRIGHT: Mr. Chairman, this is the only time at a dairy convention that I get a chance to make the speech that I want to. I am very glad to know that this association has been so successful for the last several years, and I believe it is a good scheme to continue the good work. I believe further it is a good scheme to continue the good officers we have here and, therefore, Mr. Chairman, I nominate to succeed himself for the ensuing year Mr. S. B. Shilling.

Nomination duly seconded.

MR. WENTWORTH: I move that the nominations be closed and the secretary be instructed to cast the ballot of this convention for Mr. Shilling.

The secretary having cast the ballot of the convention for Mr. Shilling, he was declared elected president of the Iowa State Dairy Association for the ensuing year.

MR. SHILLING: I wanted to talk before, but I was not going to say a single word to you that I am not going to say now. It seems to me that it is presumptious on my part to stand here and accept that office again; I asked, and I asked sincerely that I might be allowed to retire at this time. I don't want you to understand for one minute that it has not been a pleasure for me to serve you. It certainly has. I have been earnest in my endeavors to uphold the dairy interest of Iowa.

I am going to accept this office, but it is only to be on one condition, and if I had done last year what I am about to do now I feel that I would not be in the position of accepting this office again. If I accept it now it is only on the condition that you do not ask me to accept it another year.

MR. WENTWORTH: The gentleman is out of order. There is not another man in this association that will give his time and $500 of his money that I know of, and we can not afford to let him escape.

MR. SHILLING: I thank you, gentlemen, you don't know how much. I wish I could thank you in words strong enough to express the feelings I have for this honor you have again conferred upon me. The only thing I can say to you is that I will make the same promise that I did a year ago—that you are going to have the very best that is in me. That is all I can do for you. Gentlemen, I thank you and I accept the office, but I want it to be understood that this is the last time, and I feel that if I had made that declaration earlier you would not have asked me to except it another year.

VICE-PRESIDENT BARNEY: I do not know that this convention has any promises to make to Mr. Shilling, and I think it would be well to have it understood that we have made him no promises.

THE PRESIDENT: The next in order is vice-president. Who will you have for your vice-president?

PROFESSOR MCKAY: I take great pleasure in nominating Mr. W. B. Barney, who has served so well in the past, and I hope will in the future.

MR. BARNEY: I would like to say that there are a great many other gentlemen in this convention who have not had this office two years. I have held it for two years. They are as much entitled to it as I, and probably would serve you better than I. Therefore I think it would be well to have some one in my place.

On motion, duly made and seconded, the secretary cast the ballot of the convention for Mr. W. B. Barney, and he was declared elected vice-president of the Iowa State Dairy Association for the ensuing year.

MR. BARNEY: In accepting this office I do so considering the fact that you have elected Mr. Shilling. He has generally done all the work, and I don't know but I should feel rather reluctant in accepting if you had elected a new man in his place, but I accept the office in view of the fact that Mr. Shilling has shouldered a good share of it before this. He is a good worker and enthusiastic man, and I feel that I have no great amount of responsibility with him as side partner. Gentlemen, I thank you.

THE PRESIDENT: The next in order is the office of secretary. Who will you have for your future secretary?

MR. ANDERSON, of Oelwein: In behalf of every man that milks a cow in Iowa, every man that makes butter in Iowa, every creamery that is open for buttermaking in Iowa, I take pleasure in nominating Mr. P. H. Kieffer, of Manchester.

MR. GUDE, of New York: In making the nomination for secretary, Mr. Anderson overlooked one feature, and in behalf of the commission men, the dealer who sells the butter made out of the milk from the cows of Iowa, I second the nomination of Mr. Kieffer.

On motion, duly made and seconded, the vice-president was instructed to cast the ballot of the convention for Mr. Kieffer, which being done he was declared elected secretary for the association for the coming year.

MR. KIEFFER: Mr. President, I feel somewhat like the guest did at a banquet when called upon to make a speech. He said, "I feel—I feel—I feel—that I can lick any man in the house."

I thank you gentlemen for the confidence you have shown in me and I will do the best of my ability to serve you the coming year.

THE PRESIDENT: I have not told a story at these conventions since I have been president, but that story of Kieffer's puts me in mind of one and I want to tell it because I heard it in North Dakota recently. It was an Irishman made that same kind of a statement; he said that he could lick any man in Fargo. Pretty soon he enlarged upon that and said he could lick any man in that county, and at last he included the entire district of North Dakota. A man took him up and licked him, and when the Irishman was asked about it he said all the trouble was he included too much territory.

THE PRESIDENT: The next office is that of treasurer. Who will you have for your treasurer?

MR. NEITERT: Mr. President, I desire to place in nomination for this office a man who has been connected with this association for many years, who has been a faithful attendant, and who has been the advance agent in its behalf and its best interests, traveling over this State from the four points of the compass for many years. He has worked for us at all times and held out the olive branch of peace; he is always ready to meet you with the "glad hand," no matter how severe the weather or how heavily he may have been taxed by his many friends calling on him at once. He is a man that is faithful, a man that can be trusted, and a man that will bring as much vigor and life to the association as anyone that appears to my mind. In behalf of the best interests of this association, I am pleased to place in nomination Mr. Frank Brown, of Cedar Rapids.

MR. WENTWORTH: I would like to say just a word in connection with this matter. I was particularly pleased at the nomination made by my friend Neitert in presenting the name of Mr. Brown. I, too, have been a participant in those olive branches, but it was marked "Cremo" on the box and "Cremo" on the wrapper, and in view of the fact that we are all working for the uplift of this association, I desire to second that nomination, and hope that the brand of olive branches he hands out next year will not have "Cremo" on it. I take pleasure in seconding Mr. Brown's nomination; and I also desire to move that the nominations be closed and the secretary cast the ballot of the association for Mr. Brown.

The secretary having cast the ballot of the convention Mr. Brown was declared elected treasurer of the Iowa State Dairy Association for the ensuing year.

MR. BROWN: Mr. President, Ladies and Gentlemen—I feel a great deal like my friend Keiffer did. But I want to say that my friend Wentworth, who seconded my nomination, never got any of the "Cremo" brand, but if he did happen to, he gave them to the shippers. He did not smoke them himself.

I want to thank the convention for the honor bestowed upon me and I want to say that if I can serve you as well as our friend Leighton has, I will be perfectly satisfied and I know that you will. Thank you.

MR. WENTWORTH: Mr. President, I would like to have the by-laws as relating to the salary of the secretary read. I would say in explanation of that, that Mr. Kieffer and Mr. Shilling, Mr. Kieffer in particular, has done more for the dairy industry of the State of Iowa than any man that has ever occupied that office, and that without disparagement to any of his valued predecessors.

The State of Iowa, as Mr. Shilling and myself very well know, is somewhat poverty stricken. I spent twenty-nine days as chairman of the legislative committee of Iowa within the past two years, in an effort to get some recognition for this association. We succeeded in getting a little better appropriation and a little better recognition of the work at the college, but we were unable to get anything for the direct interests of the association.

Mr. Kieffer has worked long, faithfully and well for your interests. We can not get from the legislature before another year anywhere near a sufficient salary to fairly recompense him for the work he has done. You, gentlemen, are the ones most directly interested in the work Mr. Kieffer does, and I think one hundred and fifty dollars' salary which you have been paying him is altogether to small. If Iowa is in a bad condition financially it is a pleasure for you to know that this association is not, and, if there is nothing in the by-laws in connection with this that would forbid our introducing the motion to strike out the words "One hundred and fifty" and substitute therein the words "Two hundred and fifty", I will make that motion at the present time.

I have done this without consultation with anybody. There is nobody in the hall or in the State that had any idea this was to be done. I think we owe it to Mr. Kieffer; I think the association owes it to Mr. Kieffer as a mark of appreciation for the work that he has done for them.

MEMBER: Make it three hundred instead of two hundred and fifty dollars.

MR. WENTWORTH: That is a good idea, and I move that the salary of the secretary of the Iowa State Dairy Association be made three hundred dollars per year.

MR. NEITERT: I wish to speak upon this matter. I will second that motion in order to get it before the house. I am speaking from the fact that many do not realize the work done by our friend and secretary, Mr. Kieffer. While the State is not poverty stricken, I must admit that a man who is worth so much for your interests, who has refused higher salaries, who is a public benefactor, is working for the State for the paltry sum of $1,200 a year.

MR. WENTWORTH: We only managed to give him that this year. He has only been drawing that since July.

MR. NEITERT: It has been only by the great interest he has taken in the dairy industry of your State that it has been possible for him to do this. As I take it, this amendment is not offered only as paying for the labors he may perform for this association. I know that in many instances in this State we have men who could command higher salaries than the State pays them in important positions here, men who are advancing the agricultural interests of the State and marking out the path which leads to the way of success, who are helped and assisted by private contributions from benevolent citizens of the State that we may retain those men as educators. I only bring this up, and it mortifies me to have to say it, that our State is so parsimonious that it will not pay our men the salaries they are worth and could command in other places. I suppose this was in the mind of our friend Wentworth when he advised the salary of our secretary advanced, and I am pleased to know that our association can easily give this increase in his salary. That will help to retain him in the field for the work he has been appointed to do. The field is great and large, and I am ashamed to be compelled to state that other States, and younger States, are far outreaching us in this line of work in assisting the dairy interests and getting instructions into dairy sections as to the betterment of their calling. The State of Iowa only furnishes a few men, three with the dairy commissioner, and the second man only recently. I will say that I have had some experience in the creamery and butter business, for over twenty-five years in the creamery business and for thirty-five years in the butter business, so I do not assume anything for myself, but I have a meager knowledge of what proficiency, or what ability a man should have who goes into the field for instruction.

I have never, in my opinion, met a man that measures up to Mr. Kieffer in point of ability, because he has a thorough acquaintance, in a practical and scientific manner, with these great interests, the manufacture of dairy products; he has helped so many patrons of the creamery and of the dairy; he is well poised in mind; he is careful and well balanced. He realizes every man's rights, no matter how high or low in wealth they are all the same to him; he realizes this is a field where they have to do the work in a careful and systematic manner; he has the ability to accomplish the desired end. When we have such a man I am pleased to second the motion of our friend Wentworth, to assist him all that is within our power, and it is within our power to grant him this aid.

MR. KIEFFER: Just one minute. I appreciate the kind words that have been said, but the financial end of this association will not stand for any increase in the secretary's salary. It is getting harder for you to raise this contribution, and it is going to put the office in a place where the best man may not be able to get it; it is going to put it in a place where it may be a financial benefit to some one to work for it that would not be properly qualified, and in the end our association would suffer. I think you have this salary as high as the association can afford to pay, which is one hundred and fifty dollars. I know what it is to raise these contributions and instead of contributions becoming larger every year, it is more difficult to raise and keep up with the previous year. I have not figured it up, but I do not think our contributions this year will quite tally up to a year ago, still we have probably more money in the treasury; but this money in the treasury is money that belongs to the buttermakers; it is from butter they contributed from their creameries and I don't see how the association can vote this money to any officer. I hope that this wave of eloquence that has just spread over you by these two gentlemen has not carried you away, and you will be your own calm selves and do what is best for the association, and I do not think you can afford to raise the secretary's salary. I thank you for your attention.

MR. WENTWORTH: Without calling directly for the financial report of this association, I wish to make this point: It is the buttermaker's money. It is the buttermakers who are voting the salary to the best friend they have, and I submit, with all due respect to Mr. Kieffer, that they have a perfect right to do what they wish with their own.

MR. KNUDSEN: There is not a buttermaker in the State of Iowa, I think, that does not appreciate what Mr. Kieffer has done for us, and who is not willing to allow that advance. Just try the buttermakers and I think you will find it out.

The motion, having been duly made and seconded, was unanimously carried that the secretary's salary be increased from one hundred and fifty to three hundred dollars per year.

MR. SMITH, of Michigan: I would like to say a word. I come from the State of beautiful peninsulas, where no man is ever handicapped by having a full pocketbook; but I want to say our State does not treat its State Dairy Association the way Iowa does. We have a regular continuous appropriation; they expect to appropriate at least a thousand dollars, besides publishing the reports of the State Dairy Association. I am astonished that you have such a fund in your treasury. That fund comes from contributions, and if this association is anything it is a State Dairy Association and your legislature ought to take care of it.

THE PRESIDENT: We have one paper on the program for this forenoon "Starters and Cream Ripening" by W. S. Smarzo, Assistant Dairy Commissioner.

## STARTING AND CREAM RIPENING.

### W. S. SMARZO, ASSISTANT DAIRY COMMISSIONER.

There is no longer a question as to the advisability of using a good commercial starter; in fact, all concede that it is absolutely necessary for best results. Not many years ago the starter was not considered necessary in carrying on the process of cream ripening; and none, except a few buttermakers who were considered cranks, troubled themselves about its use. These gentlemen have since demonstrated, however, that it takes a good starter to make a fine grade of butter. We are now living in a different age, and our methods of creamery management have undergone great changes. The cranks have found out that a commercial starter properly used helps to control the cream, so they may be able to make a high and more uniform grade of butter. I could cite you to several buttermakers whom we have been able to get interested in commercial starters, and by its use have raised their premiums from one-half to one and one-half cents above the quoted market. These very buttermakers were at first opposed to using a starter, but since they have become familiar with its use, would not think of making a pound of butter without using a good commercial starter.

I will briefly go over the making of starters. Originally speaking, all the different kinds of starters are included under the names ''natural'' and ''commercial.'' The latter is prepared from a supposed pure culture of bacteria obtained from the laboratory; the former includes a great many kinds of dairy products, which are supposed to contain a preponderance of those germs which are involved in the production of desirable flavors. A good natural starter is usually obtained by selecting into sterilized jars a number of different samples of the best milk coming into the creamery. The samples are allowed to sour naturally at about seventy degrees, and the sample which coagulates into a smooth, uniform curd and has a pleasant, mild acid taste, is selected and used as a mother starter. When inoculated into a large sample of selected pasteurized milk, cooled to, and kept at, a temperature of about seventy degrees, until it begins to coagulate, it will usually produce a good starter. The best method to prepare a new commercial starter is to pasteurize a pint or a quart of the best milk you can find. This can be done by placing the milk in a sampling jar; then place the jar in a pail of cold water; then heat the water until the milk is heated to 180 or 190 degrees. It should be kept in this condition twenty minutes; then the hot water should be drawn off and cold water turned on until the milk is at a temperature of 85 or 90 degrees; it should then be inoculated with a pure culture and then cooled down to 65 or 70 degrees, and held at that temperature until it begins to coagulate; and at this stage it is in the best condition for using, as the germs are more active. Always use enough mother starter so that your starter will thicken in about twenty hours. Many buttermakers still claim that they can obtain satisfactory results from the old method, or so-called homemade starter, or even none at all; and, while under the most favorable conditions it is possible to produce a good commercial butter without the aid of a commercial starter, it is never safe to depend upon these primitive ideas and methods.

An additional value of the commercial starter is its value in helping to overcome undesirable flavors and produce a more uniform and higher grade of butter.

It is but the plain truth that, never in the creamery business has ability been as necessary as it is now; and I earnestly hope that every buttermaker in the State of Iowa will become interested in the starter and see if we can not raise the standard of Iowa butter to a high mark,—one that no other State in the Union can reach.

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## DISCUSSION.

MR. SMITH: How widely used are commercial starters in Iowa?

MR. SMARZO: About thirty per cent of the creameries, or about one-third are using commercial starters.

MR. SMITH: What per cent are gathered cream creameries in the State?

MR. SMARZO: About seventy-five per cent are gathered cream creameries.

MR. SMITH: Do you mean to tell me that any gathered cream creamery undertakes to make butter in Iowa without the commercial starter?

MR. SMARZO: A good many do not use it.

MR. SMITH: Let me tell you something. I have recently been to Pittsburg and Washington, where a good deal of Iowa butter is consumed, and complaint is getting pretty loud that a good deal of Iowa butter, made from gathered cream creameries, goes off flavor quickly. It gets fishy. This is an inland State and can not have any fish, but the flavor seems to come from lack of proper care of the cream. I want to know if the proper use of the starter would prevent the butter getting off flavor?

MR. SMARZO: If the cream were delivered to the creameries sweet; but the trouble is too much gathered cream is delivered to creameries in sour, rotten condition.

MR. SMITH: How far will a commercial starter correct the sins of the farmer ?

MR. SMARZO: Not very far.

Mr. Smith: Here is why I am getting at this thing. In Michigan we are building up the dairy industry just as directly and quickly as we can. We do not believe we have struck the bottom when we send men like Kieffer and Smarzo to the creameries. We have got to go further away and send out instructions to the farmer. You Iowa men may be naturally clean, but let me tell you what has happened. Your men who sell separators have gone to our farmers and made them believe that if they will only buy hand separators all they have to do is milk the cows, turn the crank, the cow will take care of herself and the separator will take care of itself. Nothing to do with the cream, only bring it to the creameries speckled and spotted, and they will ask us to make good butter of that by the use of the commercial starter. I want to find out whether it is possible under God Himself for a commercial starter to take farm cream which is a diluted tincture of cow manure, which has been associating with all the odors of the barnyard, has never been kept cool and delivered to the creamery at a temperature of seventy-five degrees, and make good butter out of it?

Mr. Smarzo: You can not overcome cowbarn flavor with starters.

Mr. Smith: You and I have been in dairy schools recent enough to know that we can get butter that is fairly eatable when it leaves the creamery, by pasteurization and areation; but is it not true that butter made from such cream and made temporarily passable will go off flavor quicker than butter made from cream properly handled with or without commercial starter? I mean to say, will not the effect of the starter only temporarily kill the permanent odor, or have you not observed that?

Mr. Smarzo: Yes, I think when those bad flavors are in the cream they will show up later on. The improvement by starter is only temporary. If you use a heavy starter you can taste the stater in the butter, which gives it a pleasant taste, but the bad flavors will develop later on.

Mr. Smith: The gathered cream system is here to stay, and if you folks only get the farmers to take care of the cream it is a good system; but if you can not get the farmers to take good care of the cream we are going to make more butter in Michigan ten years from now than you are in this State, because we are taking the bull by the horns when he first gets into the china shop. If you folks get your farmers to take good care of their cream it is going to be a blessing to you; if you are not, we are going to take advantage of your downfall.

J. G. MOORE, Wisconsin: One criticism I wish to make in regard to Mr. Smarzo's paper is that he mentions homemade starter in no complimentary terms. He should have downed it and downed it good. The homemade starter will get the man who uses it into trouble. In support of this assertion I wish to state an incident which happened right in Wisconsin. You will remember the National Buttermakers' Convention held its meeting in Milwaukee, and the man who made the butter that secured the gold medal at that time made his butter with what is called a "natural starter." I would like to ask if any of you have heard from him since? Have you? Has anyone heard of that man since? No, you have never heard of him because he is depending on the natural starter, and it is not what it is represented to be. If you want to be successful in the use of starters, use a commercial starter.

MR. KIEFFER: There seems to be a sort of misunderstanding, I think, among the buttermakers in regard to a homemade starter. Now I find in my travels that when you speak to a buttermaker about starters, he will say, "I use a homemade starter," and when you ask him how he prepared that starter, you will find it was simply by catching skim milk from the separator, heating it at eighty degrees and letting it sour. I do not call that homemade starter. I may be wrong, but I do not have that kind of starter in mind when I speak of homemade starter and the kind of starter you have in you entry blanks. When you say homemade starter, I have in mind that you had something to do with preparing that starter; that you did something, that it did not sour naturally. That is not the natural milk that you caught from your separators, but I think it is something you did. A homemade starter is, I think, a starter of this kind: that you take a quart of nice sweet milk, as fresh from the cow as you can get it; put it into a mason jar, held at a temperature of seventy-five degrees until thick; then you pasteurize some skim milk or whole milk and inoculate that pasteurized milk with this previously prepared mother starter, and by using this pasteurized milk that was prepared with starter that you carry is what I term a homemade starter, and not the starter that is caught naturally from the milk and allowed to sour without being inoculated with a bacteria. The natural starter is the starter I would call that comes from the separator, or that is set away and allowed to become thick in order to use it to sour your cream, regardless of what sort of bacteria there is in it. Let us have this clear, that by the homemade starter we mean a starter that a man took some part in it to control it, and that it is a starter that he uses in connection with pasteurized milk and cream. I would like to hear any suggestions as I would like to have the boys thoroughly understand this.

MR. SLAPPE: What would be the object then of using the milk for all the starters that you would select to use as a mother starter for your pasteurized milk?

MR. KIEFFER: I said one quart, but I should have said five or six quarts or samples. You take five or six samples from five or six different men, hold at a temperature of seventy-five degrees in glass jars until it becomes thick, and then you select from those five or six jars that you have for starter that which has the most pleasant flavor, that which has a nice acid flavor, that is free from any pinheads, that has a solid curd; you take part of that and use as a mother starter. I have taken fifteen samples and selected from them, and in that way you are pretty apt to get one good starter with good bacteria that you can add to your skim milk; but if you trust to one man's milk to come in you may be disappointed. If the bacteria in the milk is the right kind of bacteria or the milk has not been carelessly exposed to unfavorable surroundings, then the starter will be all right; but the chances are at this time of year that one chance out of ten you will strike a natural starter of that kind that will be as good as you can select out of eight or ten jars yourself.

THE PRESIDENT: I am sorry, but we shall have to cut this discussion off. We should have an hour or two on this subject, but it is past time when we are to adjourn, but I wish to make one statement before we do so. I have in my posession the original gold medal that was awarded to John Stewart in 1876, and it is rather unique so far as our medals are concerned today. We are favored by the presence at this convention of the widow of John Stewart; we are honored by her presence. She brought this medal along and if any of the buttermakers would like to see a medal of the brand of 1876 we would be pleased to have them look at it.

MR. WENTWORTH: I want to talk starter just a minute. Professor Smith has discussed Michigan starters and what the Michigan legislature has done for the dairy association of that State. I want to ask every buttermaker and every man here who is in anyway connected with the dairy industry, when he goes home to work up a starter. We want a homemade starter. Get after your member of the Senate and member of the House and see when Mr. Shilling and your officers go before the legislature the coming year that they meet with a more kindly and more generous response on the part of the legislature of our State. We have a legislative committee, of which I have been a member for three years, and I want to say that the boys have responded wonderfully whenever we have asked them to do anything; but we can not go before the legislature with a two, three or four weeks' campaign only and get results. We must begin before your member goes, because there are a thousand and one things that will take his attention after he gets there. When you go home this time you bear in mind what Mr. Smith has said about starters and see that the Iowa kind is about three times as strong.

The meeting then adjourned until 1:30 P. M.

## THURSDAY AFTERNOON SESSION.

Meeting called to order at 1:30 P. M. by President Shilling.

THE PRESIDENT: The Iowa State Dairy Association seems to be up against a pretty hard proposition, the elements are against us. Last night I had to make excuses for the railroads from the fact that they had delayed one of our speakers, and today I am before you with the same kind of proposition. We have just received word that Professor Curtiss' train was delayed and he had missed connections, so we don't know whether he is going to get here this afternoon or not. We are fortunate, however, in having some good timber to substitute and they have kindly consented to take a few minutes of the time that was to have been occupied by Professor Curtiss. Professor Bouske will first talk to you a few minutes on the care of milk on the farm.

## CARE OF MILK ON THE FARM.

### PROFESSOR BOUSKE, AMES.

*Mr. President, Ladies and Gentlemen*—I think you are unfortunate in having to have a substitute for Professor Curtiss.

I will just speak about a few of those things that come up in taking care of the milk on the farm, because that is something that is always of interest at this season of the year. It is something on which a good deal can be said, and for that reason I will only take up a few features that are of interest at the present time of the year, viz: the freezing of milk, the effect of freezing upon milk, and the effect of keeping milk in the barn, in houses and in the kitchen.

When milk freezes it seems to do so in a different manner some way from the way in which water will freeze. Of course the first ingredient in milk to freeze is the water and, if the freezing takes place slowly, as it usually does because people seldom leave milk exposed to intense cold where it will freeze rapidly, if frozen in such a place slowly, water will crystalize into little crystals of ice, and if this goes on slowly you will finally have a kind of slush, looking a good deal like a mixture of snow and milk. The water freezing first forms these crystals of ice. Usually, I think, they are rather apt to be needle shape, and the other constituents of the milk hardening later. It is a question whether we could say that the casein and butter fat freezes. Butter fat becomes hard sometimes. When the milk is freshly drawn it is still warm and the butter fat is in liquid condition, and remains in a liquid condition even at seventy degrees, but somewhat below that it hardens; we might also say freezes or congeals. As this freezing goes on, this crystalization of water into ice, the other constituents in the milk are crowded more together. The milk consists mostly of water, about eighty-seven per cent being water and this water gathers together into lumps, and between these lumps or crystals of ice are found the butter fat or casein, so in that kind of freezing the milk is not as homogenous as it is when not frozen. Of course any large quantity of it would contain the same portion of those different ingredients, but if we were to pick out little bits of milk you might get mostly ice and mostly constituents not water, that is casein and fat.

If this freezing repeats itselt, that is the milk thaws itself, then freezes and thaws again, the butter will appear upon the surface of the milk. I think a good many of you have noticed butter on the strainers when a quality of milk has been run through in the winter. I have noticed it very often myself. Then I have noticed that in the tempering vat, the kind of vat we used to use some years ago when you hold the supply of milk for separation and where it is tempered before it runs in, very often in those vats you will notice the melted butter on the surface of the milk. That is not butter churned out of the milk by agitation of the milk on its way to the creamery; it is butter that has been produced by repeated freezing and thawing of the milk. This is even more apparent with cream. This fall I saw a little jar of cream which was ripened and then left in a cold place where it froze. Upon thawing, butter appeared in the cream, a big chunk of butter just the same as though it had been churned. This happened with only one freezing.

Of course everything was favorable; the cream was ripe, there was a great deal of butter fat there, so that it was ready for this particular change to bring the butter fat together so that the particles stuck and made lumps of butter so large that could not be held in suspension any longer but rose to the surface, and there appeared in about a pint jar of cream a lump of butter that filled the jar quarter full.

So this is one of the changes occurring in the freezing of milk, and where a quantity of butter gets separated in this way it is undoubtedly a loss. I think it is not a very considerable loss, but it is interesting to know this because it is something you can observe here and there. I am explaining this because I want to assert the general proposition that freezing does not have any very noticeable effect upon the milk, and that it is not injurious to the milk where it is to be used for any ordinary purpose. I mean that it does not alter in any way or lessen the value of the product that is to be made from the milk. I do not mean that it has economical value; that is an entirely different question; but it is not injurious to the quality of the milk in other ways. We are not aware of any change in the quality of the milk, and this same statement can be applied to cream with equal validity.

The effect of cold upon souring the milk, of course, is very well known. Cold in a marked degree makes the milk keep longer, prevents souring, prevents the development of any of those flavors that are developed in the milk after it is drawn. I think freezing has no effect upon flavors that the milk already contains. The greater degree of cold the less fermentation there is in the milk, and in the neighborhood of the freezing point, that is, a little above the freezing point, there is practically no fermentation, and at the freezing point and below there is none so far as we can measure it by our ordinary means, by the senses, and in an ordinary reasonable length of time, say several weeks. By the way, this freezing of milk is the method that is used for preserving milk where it is shipped long distances, or has to be kept a long time. I am told it is the method used on large steamers that cross the ocean; the milk is frozen and kept in that condition and when thawed it is just as valuable as it was before it was frozen. There are no spontaneous chemical changes taking place in the milk and there can be no bacterial changes at these low temperatures, so the effect of freezing is to prevent souring of the milk and prevent the development of any flavor whatever.

While we are still dwelling upon this question of freezing the milk, I think it would be of interest to look at it from two standpoints. I am told by buttermakers, and I believe it myself, that it takes as much steam to warm frozen milk to a separating temperature as it does to run the separator to separate that milk, and we all know that it takes a good deal of coal to run the creamery and run the separators, so the amount of steam necessary to thaw frozen milk and separate it is naturally considerable, and it may, therefore, not be economical to freeze the milk, especially if the patrons can be instructed and induced to take good care of it and keep it in good condition without letting it freeze, it is more economical to have them do that than to have them let it freeze and bring it to the creamery in that condition, to say nothing about the extra work and annoyance of having to thaw milk before you can empty it into the weigh can.

Another feature of the freezing of milk is the effect of per cent upon the test. Of course, applying the general propcsition that I am trying to explain, that it has no effect upon milk, it should have no effect upon the composition of the milk and no effect upon the test, still the fact is, it does. It would not if the milk were handled properly and sampled properly, but you see if it is sampled in a frozen condition, if it is in the form of slush, and a person would get most of the ice portions it would be watery and the test would be low; if he should get the liquid portion of that slush, which is fat and casein, a sort of concentrated milk, the test would be a good deal higher in butter fat.

It may be of interest here to state that a new process of condensing milk is based upon this change that occurs in it when it freezes. The milk is frozen solidly so the water crystalizes out in the shape of snow ice, then it is put into the centrifuge, something like that used in laundries or sugar beet factories where they centrifugal the beets to strain out the sugar. The revolving produces centrifugal force, which thaws the liquid out of the milk, leaving the ice, that is the water in the centrifuge, so in that way they get condensed milk without changing it at all. It is perfectly normal in every way. Speaking comparatively of the milk produced by the ordinary means of condensing, which always has more or less of the cooked flavor, this kind of condensing milk leaves no flavor at all. It has been condensed in a physical way. The ordinary method of condensing by evaporation subjects milk to so much heat that the heat sterilizes it and the addition of sugar prevents decomposition or spoiling of the milk.

But in other ways the freezing of milk or cream is likely to make itself noticeable upon the test, not because its composition is changed, but because conditions occur there that influence the test. For example, the milk usually begins to freeze along the outside and the top, and if a can of milk comes in partly frozen you will find a layer of ice around the outside and top of the can. As the milk splashes and strikes the lid it will freeze to the lid, and if this frozen milk is left adhering to the can I think it contains a greater proportion of cream than that which has been emptied out, especially that part of the milk adhering to the shoulder of the can and lid; that is mostly cream, especially if the milk has been standing for some time.

Frozen milk is difficult to sample because it is a question whether it can be sampled accurately while in a frozen condition. If a person gets the liquid mostly, it is richer in butter fat, and if he gets mostly snow and ice it is poorer in butter fat. I have never had any experience myself that would show that the freezing of milk affects the flavor of the milk and flavor of the butter directly, that is through the freezing itself. It is true that such milk will not ferment in the same way as milk that has not been frozen. It is sweeter when it thaws out, and it would take longer to ripen cream from this milk. You would have to handle it differently than cream from milk already a little sour, or which had never been frozen so that fermentation has been going on all the time. In the creamery you want milk that has suffered as few changes as possible, so this frozen milk is good milk so far as its suitability for making butter is concerned, because it has suffered the least change. If there is any ripening to be done, I think it is better for the buttermaker to control that ripening and to have it go on at the creamery and not have it go on in the milk while it is under anybody's control, so that from the standpoint of developing flavor in the cream I believe frozen milk is suited for making good butter because it is sweet. If you use a starter of any kind it has a chance to use its influence in the cream you get from this milk, and it gives the starter a chance to develop the desired flavor.

There is one thing that makes it difficult for the buttermaker to make good butter. We find a certain variety of flavors in the milk and cream that we call ''wintery'' flavors and often a man will trace those to a certain cause, which is not really the real cause. People often make the mistake here of thinking that two things happening at the same time have the relation of cause and effect. Just because the milk is frozen and the flavor is poor they may reason it out that it is the freezing that injured the flavor, while the fact is there are a great many things occurring at the same time. The cattle, of course, are dry fed instead of green fed; they are being stabled instead of being outdoors; the milk has more stable manure in it. The milk has no stable manure in the summer if the cattle are kept outdoors, and so on; the milk is not delivered as often, so there are a great many things that happen at the same time and any of them might be the cause of the poor flavor and poor condition of the butter at this time of the year. So that before coming to conclusions like that a person should make a more thorough investigation and be a little more certain of the effect of these different things.

So much for that point. By talking in such an informal way, I rather hope to start you thinking on subjects and bring up a discussion in this way and then perhaps bring out some points of interest, so I wish to give a little time and try to cover every possible phase of this subject.

In regard to keeping milk, we hear so much about the difficulty that the buttermaker is having because his patrons keep milk in the house, because they keep it in the barn, and so on. Where do you want them to keep it, anyway? I have not found many buttermakers yet who can tell their patrons just where they should keep their milk and cream; they know they should not keep it in the kitchen, cellar or barn, but few know where it should be kept. If they leave it in the woodshed it will freeze and we do not like frozen milk because it costs to separate it. I think the buttermaker is very human in this respect, just as much as the farmer, and that he has a tendency to find fault with the farmer before he looks for some fault in his own method of making the butter. I think it is best to be fair here, not to try to place too much blame on the buttermaker or on the farmer. I think if we are to make any progress we have to know just what improvements are needed because if we do not we can not make them. As long as the buttermakers think the farmers are at fault they will not try to improve their methods; as long as the farmers think the buttermakers are at fault, the farmers will not try to improve their methods of handling the milk. So I think these troubles are quite important because we have to show our man first that his methods need improvement before he will become interested in finding better methods of handling his product.

I think there is not as much harm done by keeping milk in the barn as is generally supposed. I do not approve of this, I want you to understand, or o keeping milk in the kitchen; but I believe there is less harm done than a great many think. I think that most of the bad flavors that develop in your cream and your butter will develop there after you receive it. That is they are things that grow there, they are not present when you get it, and those that are present when you get your milk a great many have developed after the product was drawn and none came in there in a mechanical way. You have this same difference,—if two men in this audience should suffer some kind of physical injury, suppose they broke their legs, we would not be in any fear that we would get broken legs also just because we are in company with these men who have broken legs. That kind of disease is not contagious at all. But if some one here should have smallpox we would be afraid we would get the disease if we should associate with them. Now the same way with milk. If you have a can of milk that has come to your creamery and it has been kept in the kitchen and has gathered a good deal of odor from coffee, it is the same case as with the broken leg; this odor of coffee will not increase; it will mix with the rest of the milk but will not develop at all; it is not contagious. But there are some organisms there that can produce bad flavor in the milk,—for example, if there is a good deal of manure there and the bacteria that can produce the bad flavor, that is contagious, and when this cream is mixed with the rest of the cream there is a bad flavor because this bacteria will keep on developing all the time, and you see it is much more dangerous than where you have a certain amount of coffee flavor. It is the same difference between broken legs and the smallpox. One kind is likely to spread very rapidly and increase in amount, while the other kind would not increase at all.

I have thought of talking about other things but I believe I have talked long enough and I leave this question for your dissussion.

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## DISCUSSION.

MR. ANDERSON: What is the ideal place to keep milk ?

PROFESSOR BOUSKE: I could not say in the parlor because in a good many of the farm houses they may not have such a place, and I could not say in this or that. I think if they keep it anywhere where it will not freeze, if you do not want it frozen, and cover the can, that it will be all right. If they leave it in the stable, that is not to be approved of, of course, but if the can is covered those stable odors and those things have no effect upon the milk. You can take the milk out of the stable and put it in the finest parlor in the country, and if you leave that milk warm it will get sour and if it has in it the bacteria capable of producing bad flavors it will get just as rotten as though kept in the filthiest stable. You take two cans of the same milk from the same stable and leave one in the stable and put the other in the ideal place that any of you would have for keeping milk, and if those two cans of milk are kept at the same temperature and are the same to begin with, the results will be the same, because the changes taking place there will depend upon two things, the kind of bacteria there and the temperature at which you keep that milk. If you let it freeze, it will not change in any way, but if you keep it warm and the bacteria is there to sour that milk it will turn sour; no matter how many things you have or where you keep it, if the bacteria is there and the temperature is favorable it will sour. If they can produce a cabbage flavor they will do that; if a cowy flavor it will develop there, and I think most of these flavors develop in the milk. You do not find them there when the milk is drawn, and I do not fear covering the cans very much. I think there is more harm done by leaving them uncovered sometimes than by leaving them covered. I believe we have not investigated this enough, that we imagine a great deal, and I believe that covering the cans does not do a great deal of harm. The only thing it could do would be to prevent the escape of what you call animal heat and animal gases, and things of that kind, so that any cool place would do, and cover the cans, I think, I am not very sure.

A. W. TROW, Minnesota: During the last fourteen or fifteen years I have hauled something like one million pounds of milk to the creamery, myself and hired man. During that time we have never kept milk in the house, never in the barn, and I have never had a milk house, and you will want to know where I kept it. I did not keep it in the parlor. I have a place to keep it that did not cost me over ten dollars. I have a box made, a tight box about two and one-half feet wide and ten feet long. I put that on a stone foundation that I made myself in an hour; mixed up a little mortar and made a good foundation; set that box on the foundation, and it is perfectly tight. It has a tight cover, a double cover. Inside of that box is a galvanized iron tank, and all the water for the cattle goes through that. An important point is that the cover must be tight; another thing, the tank must not be too large, simply large enough so the milk you have to keep can all go into it; then you have about as much milk as water. I have an outlet to the tank below the top of the tank so it will not run over. Always fill the cans a little below the outlet, then you see the water would have to freeze, if somebody should be so careless as to leave the cover open, it would have to freeze an inch or two to get down to the milk. We have used that tank ten years. Go to my place in such weather as this and you will find the milk in that tank; it was there last night, and, notwithstanding the fact that the thermometer has been down to twenty-five or thirty below, there was no frozen milk. I say the ideal place, both winter and summer, is water to keep milk, and I think the buttermakers will all agree with me.

THE PRESIDENT: We are favored this afternoon also by the presence of a man from Wisconsin, Mr. J. G. Moore, the creamery inspector of the State, who has kindly consented to talk to us for a few minutes.

## REMARKS.

### J. G. MOORE, MADISON, WISCONSIN.

*Mr. President, Ladies and Gentlemen*—To express my feelings on this occasion when your happy president here invited me to fill to the best of my ability Professor Curtiss' place on the programme I will tell you a story, a short one. A woman lay dying; there was no doubt about her demise, and she called husband to her side. She said "Now, John, I have been a good wife to you all these long years and I am about to die. I am not going to burden you with a great many requests but there is just one next to my heart and I want you to promise you will do it for me." Well, he said he would do it, and she said "when my funeral comes off, I want you to ride in the carriage with my mother." He looked at his feet a minute and then said "well, I will, but it will spoil the pleasure of the occasion for me." So you heard Mr. Kieffer telling about his feelings, and that expresses my feelings on this occasion.

I came out expecting to enjoy this meeting and learn something. I am doing both, but I would prefer to sit in the audience and learn at the feet of these gentlemen who are so much better adapted to talk to you than I, but I will talk to you about a few things that are agitating our minds in Wisconsin. One of these is creamery inspection, the other is, or has been the licensing of buttermakers and creameries in order to have better results.

We, of Wisconsin, have had a Dairymen's Association for thirty-three years. That association has had an appropriation from the State, which it has expended in keeping up cheese instructions in the State. You people have noticed in the papers the results of the tests at the World's Fair, how Wisconsin got it rubbed into her all over so far as butter was concerned, but the Wisconsin cheese took all the prizes, or nearly all. There was something back of that and to my mind one of the greatest factors in presenting that result in cheese was the fact that we had those cheese instructors working among the cheese factories for the last fifteen years.

You have among you Mr. DeWitt Goodrich, who is the first creamery instructor Wisconsin ever had. That was about three years ago. We have the largest number of creameries and cheese factories of any State, 1,200 creameries and 1,800 cheese factories, so the work of instruction is a large one. I say inspection and instruction, because I believe before you can instruct a man you must know where he stands; in order to find out the necessity of a creamery you must inspect it before giving any instruction. Therefore we think inspection and instruction should come from the same source.

There is a divided sentiment as to where these instructors and inspectors should be placed. We think they should be placed under the dairy and food commission in preference to the dairy school, in order that the dairy and food commission may supply them with the needed police power to back up their instructions, police power to compel those people to do what we want them to. We were fortunate this year in having been successful in the late political campaign and our governor has recommended certain things which we hope to have adopted in laws, and we expect a large increase in our number of inspectors, possibly fifteen, and we want every factory in the State inspected as many times as possible.

These instructors must be competent men, because instruction or inspection, in order to be what it should be, must be done by competent persons. In order to keep this out of politics, the evils of which you all know, requires some little thought in regard to the appointing power, and we feel it better than to leave it to the judgment of any person that we have civil service examination for these inspectors and instructors.

The benefits of instruction are many. We look at the men in Minnesota who have carried off so many prizes during the last few years, and we feel it is largely due to the work the inspectors have done. We may be wrong in this, but we do not consider that Minnesota or Iowa has better natural advantages or better buttermakers than Wisconsin, but we do think this inspection of factories, the fact of the inspection backed up by what the buttermaker has suggested to his patrons, has accomplished great results, and we think so much of it that we intend to copy it.

It has been suggested by some people that a license would be a good thing; that it would help matters; that it would raise the standard, and that may be so, but I do not think, in Wisconsin, we are prepared for that at the present time. I think it is a matter of education. We must educate ourselves and public sentiment up to the point where we can demand that. At the Wisconsin Cheesemakers' meeting, held in December, we had this matter up for discussion and, while a number of people, among them Governor Hoard, came there with the intention of upholding the licensing idea, they went away if not entirely convinced, nearly so, that the license system would not be best at this time. If you license a factory or operator what are you going to do? Are you going to grant everyone in the business a license and then go on and inspect and find out whether he is worthy to retain it? Or are you going to make him pass inspection and examination before you grant it? And the great number of operators now at work, if they refuse to take any license or can not pass examination, can you force them out of business? No man can be deprived of life, liberty or property without due process of law. If I were in business, and for some reason I was not able to secure a license, or unable to pass the examination, do you suppose I would calmly submit to revocation of my permit to continue business? destroy my property, or take it away from me? No, sir. I would carry this thing to the courts, and anyone that has had any business with the courts would know what that would mean.

I think inspection, competent inspection, sufficient inspection will cover the defects, or remedy them, that the license system is supposed to cover. Without competent inspection your license system is bound to fail.

In fact, the license system might be the source of a great deal of irritation. Not only that, but we might have a little graft in connection with it, because recommendations of one man in giving a license to either a maker or an operator would subject him to some idea of favoritism, possibly.

Supposing that one of you gentlemen had been running a creamery for a number of years; you had paid high prices for milk and no one had been complaining about your butter. Supposing the inspector refused to give you a licence and wanted you to shut up business; would you submit to that? Would you go to court and get a trial? Could you get a jury that would put you out of business, a jury composed of neighbors and friends? I doubt it, and in my opinion the license system where it has been tried, particularly in some places, notably in South Dakota and over in Michigan, and in new Zealand where conditions are so much different than here, the the conditions have been different.

There is one thing I would like to speak about; the thought was suggested to me by a buttermaker at dinner, and that is in regrard to the acid test. He said he ripens his cream up to thirty-four degrees acidity. Now I say that thirty-four degrees is not acidity at all, it is only c. c. solution. At Rockford Professor Van Norman, of Indiana, gave a very able paper on acid test; Professor Carson, who recently came from Canada to Wisconsin, at the cheesemakers' convention gave an able paper on acid tests. Both of these gentlemen, however, gave a general modification of existing tests, which I think is wrong. We have too many tests now; they are confusing. To illustrate my point—I was called to a factory where they were having trouble with their butter. The buttermaker had read that a prize winner in Michigan had ripened his cream to thirty-three degrees. This buttermaker, not knowing anything about it, bought a Farrington acid test and ripened his cream thirty-three c. c. acidity. The consequence was that cream was hardly more than sour and you may know the kind of butter he made; the butter had no character whatever. So I say, in talking about acidity, these associations could do a great deal of good by coming down to some uniform basis to express acidity, not express it in c. c. but express it in degrees of acidity, which it seems to me would be the proper thing.

I think that is all I care to say, Mr. President. I thank you.

View in the Floriculture Department, Iowa State Fair, 1904.

THE PRESIDENT: You people who know me best have undoubtedly noticed that inside of the last year my hair has turned gray and I have also grown more bald. That all comes from being down in St. Louis last summer and undertaking to follow a man from Minnesota. For some reason or other Minnesota was getting away with everything and there was a great deal of speculation among a lot of us as to why it was they were doing this, and we did not know but possibly there was a little of politics being worked. They sent me out to watch that man, and I never did a poorer job, for I nearly lost the chap. I could not keep track of him; I even went so far one day as to have chalk put on his boots, and he changed boots on me. That man has probably made Iowa more trouble than any man in this convention, or who ever will be here. He is here this afternoon, and if possible I wish the audience would get even with him. I will not mention his name, but I have the pleasure of introducing to you Mr. Trow, from Minnesota.

## VALUE OF SILO.

A. W. TROW, PRESIDENT MINNESOTA STATE DAIRY ASSOCIATION.

*Mr. President*—When I was appointed to look after the butter sent to St. Louis from Minnesota, I went there with a good deal of fear. The result of the first contest, of course, you know about. I was very jubilant, but I had not counted fully with my antagonists, and the next result was that Iowa was closer to Minnesota; the third result was that Iowa was a little ahead of Minnesota, and I went home and told our folks that I was awful glad there was only one month more; and I told them the truth, and meant every word of it, too,—I told them if they kept that man Shilling hanging around, and kept that man Kieffer and that man Smarzo all the time, and especially got two or three more good men in the field Minnesota will have to take second place.

I believe that is the truth and I believe all Iowa needs is a little more agitation, a little more thought along this line, a little more to bolster up the ambition of the buttermakers. The fact is, the more I am associated with the buttermakers, as I have been the last few years, the more I believe they need more encouragement, and not so much inspection. Something to get them agitated, something to wake them up, as Sam Haugdahl says "to get them alive".

You know the first thing that every manufacturer considers, I don't care what he manufactures, is the cheapness of the raw material. You can talk about good butter and increasing the output of the creameries, but we have to go to the farmers for the milk, and they are not going to get interested unless they can make money. I know, from experience, a farmer is not satisfied unless he can make money. In order to produce milk and make money we have to have a cheap feed

I believe that as land gets higher we will have to give more consideration to that question of cheap food product. I will make this statement, and I think the farmers in this audience will bear me out, and that is, that the cheapest coarse feed in this country, for Iowa and Minnesota, I say the cheapest coarse feeds will be clover and corn fodder. Clover on one side to get the protein element, and the carbo-hydrates we get in corn fodder. There is no crop you can grow that will produce as much to the acre as corn fodder. The fact is, there is hardly a crop grown today that will produce more than one-half as much to the acre as corn.

But the great question confronting every farmer is "how are we going to handle this corn fodder?" We have a system for handling most everything else on our farms, but the handling of corn fodder is a tremendous matter. I might call on farmers in this audience to take it up and express their views as to the best method of handling corn fodder; one man would have one method, another another, and I will venture we would hear of a dozen different ways of caring for it, and the man giving his system today would change his mind within a year. That was my experience. I realized there was as much food in the stalk as in the ear, and of course your chemists have that worked out. You know when you take the ear and analyze it, and then take the leaves and analyze them, there is just as much feed in the stalk as in the ear, and that is why we have to save the whole thing.

How are we going to save it? There is the old-fashioned way of shocking in the field; I have tried that. You know when you take those shocks out in the field that nice smell comes out of it that the cattle likes, then it works well; but that does not work always. Once in two or three years a big blizzard comes up and you have to go out with a pick-ax, a log chain and a shovel and perhaps have to hitch a team to the log chain to get the shock out. I have done that. If put up in stacks it often heats, and the last few years it heated badly. Then the shredder came. I don't want to say a word against the shredder. I don't want to say a word against a class of people introducing labor-saving machinery, but at the same time I have tried the shredder and it was not satisfactory. I used it two or three years and found it was too expensive. When I came to feed the fodder to the cows it was not much better than when fed in the bundle.

Another thing about the corn shredder, if you will allow me to diverge from the question just a moment. I have been attending institutes in Minnesota for a number of years. Yesterday I found a man with his arm taken off in using a shredder. The same thing happened a week ago, except that the man lost his fingers. At least one hundred arms have been taken off by shredders in Minnesota. Those fingers and those arms are worth more than all the corn fodder they will ever grow in Minnesota.

How are we going to handle it then? Seven years ago I built a silo. The only thing I have to regret is that I did not build it twenty years ago when I first started in. What is it about the silo that makes it better? We get this feed up in the best possible form for the cows. They consume every portion of it. When you are feeding dry corn fodder, they do not eat over half of it, but from the silo they eat it all and it is a juicy food, a food they relish, and you might say it is grass in the winter.

In our neighborhood we have twelve and there is not a man that has a silo that is not very enthusiastic over it, and I can say to the buttermakers that if you will encourage your patrons to build silos and build them right, get two or three to build, that they may own the cutter together, I will guarantee that after that you will have a good patron. You will have a a man that will make money from his cows; he will be getting big checks, and this is the secret of getting people into the dairy business.

Some may think that a silo is too expensive. I want to make this statement, that the silo is the cheapest container that we have for feed. A real good silo costs only about $1.50 per ton capacity. You may think if you have not had much experience, that it takes a good deal of time and labor to fill these silos. Remember it is just like a man having a threshing machine for the first time in this neighborhood. Wouldn't you have a whole lot of trouble the first season? We had this difficulty when we first commenced filling the silo, but that is now a thing of the past.

I would like to tell how much it took to fill my silo, which is eighteen feet in diameter, thirty-two feet deep, on a foundation of one and one-half feet; holds about one hundred and seventy tons. It took one man with four horses and a binder to cut the corn in the field; then five or six men to haul it to the machine, one man to feed and one in the silo, and the silo was filled to the top in two days. That was not all; we let it settle about two weeks and refilled in about three-quarters of a day. That was the help required to put up 170 tons of feed in less than three days. No shocking or husking of corn, but the whole thing in the best possible shape for feeding, and the cows ate it all up, and it came out of the silo better than it was put in. That may be a strong statement, but at the same time it does come out better, because it goes through that soaking process by cooking, and the shell of the cornstalk, which is so hard and woody when it goes in, goes through that soking process and softens, so that it is more palatable and the cows like it better when it comes out.

The silo is going to solve the problem of getting a living off of from forty or sixty acres; solve the problem of expensive farming, and that is the question that we are going to be up against in the future in this country. A whole lot of old fellows have one hundred and sixty acres or three hundred and twenty acres of land because they could not help it and got it for five or ten dollars an acre, but the next generation, how are they going to farm? Under the present system of feeding corn fodder, raising timothy hay and keeping poor cows, can those younger fellows buy that land and pay fifty, sixty or seventy dollars an acre for it, you may ask? Is it possible for a man to get a good income from fifty or sixty acres of land by the use of the silo and feeding to good cows?

I want to tell you of a man I visited the other day, at West Concord, Wisconsin. I had heard of this man Griswold, who was keeping a herd of cows on fifty acres. I went out there, and I found a man on fifty acres of land keeping twenty-eight cows, about twenty head of young stock, and the necessary horses that he needed in working the land. I went through his books, as he is a careful bookkeeper. I found that on that farm of fifty acres, ten acres of which was in pasture, and four hundred and thirty dollars worth of feed that was bought, he sold two thousand three hundred dollars worth of cream. Some may say, perhaps, that was ice cream, but it was not. The cream sold for twenty-two and one-half cents for butterfat. Two thousand three hundred dollars from twenty-eight cows, about eighty dollars a cow. On the same farm he sold three hundred and sixty dollars worth of hogs, one hundred dollars worth of potatoes and fifty dollars worth of hay. What was he doing selling hay on that little farm? Well, he had two silos. The increase in the stock on that farm amounted to two hundred dollars, making a total revenue of about three thousand dollars on that fifty acres.

This is an encouragement to young farmers who can not have a big farm. He had a silo about eighteen or twenty feet in diameter and thirty-two feet deep for winter feeding, and then another silo for summer feeding. He fed those cows all the corn ensilage they would eat, both winter and summer, and that was the secret of getting so much off a small farm.

Of course he took good care of his cows; used the Babcock test and scales to weed out the poor ones, and it is a fact that he started about ten years ago with a silo, good care, the Babcock scales and tester. I asked him the secret of his success and he said, "the first thing that started me was close attention to the cows and weeding out the poor ones, and then I could not get along without the use of the silo."

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## DISCUSSION.

PROFESSOR SMITH: How big a silo do you allow for your herd?

MR. TROW: I want the silo to be not less than twenty-four to thirty feet high. The higher the better; then wide enough so it will last the herd from fall until spring. You need to feed off one and one-half to two inches a day; it would be better to take off more. Some people recommend two silos, but the trouble would be the expense. It is with some reluctance I advise farmers to build two silos. It is hard enough to get them to build one. Take one ten feet in diameter, it holds only one-quarter as much as one twenty feet in diameter, and it costs one-half as much, so you can see in building a small silo it costs twice as much for a capacity as one twenty feet.

PROFESSOR SMITH: How many square feet do you allow?

MR. TROW: We figure that a cow will eat about one cubic foot per day. My cows are consuming from thirty-five to fifty pounds at the present time. Another thing I did not mention, all that feed last year came from thirteen and one-half acres.

MR. ANDERSON: How did you plant your corn?

Mr. Trow: Always in rows drilled north and south on the richest land, at least twice as thick as for husking.

Mr. Anderson: What variety of corn?

Mr. Trow: Always the corn that does best in your locality for husking. Another thing, when you come to fill the silo, wait until the corn gets well dented. It is more liable to freeze on the inside than that which we allow to get quite ripe. Three years ago the frost struck our corn and we had not commenced to fill yet. We had to put the frosted corn into the silo and it came out good. Since then we have not worried about frost, and we put water on top to make it pack good and to exclude the air. The secret of good silage is to keep the air out of it. When we flrst commenced to fill our silos, three or four owned the machinery together. It is quite a burden for one man to own all the machinery. A good feed cutter, mounted on trucks, costs $175. Then one of my neighbors concluded to own the whole outfit, and now he owns the feed cutter and power, a gasoline engine, and does the work, and I have not a dollar tied up in machinery.

Mr. Anderson: What do you mean by filling twice?

Mr. Trow: We fill it to the top, let it settle, then fill it again. The total expense is one man to cut the corn in the field, five or six men to haul it, one man to feed, one man in the silo, and you fill it in about three days. Thirty-five dollars for the engine and cutter. It will cost you pretty close to one hundred dollars to get 170 tons of ensilage.

*Question:* Did you say you got all that from thirteen and one-half acres?

Mr. Trow: Yes, but I want to qualify that a little. That is the best yield I ever got, but I did get it last year.

*Question:* How many cows do you keep?

Mr. Trow: We keep about twenty-five, and that will make the most of their coarse feed for the entire winter; and all the little calves that are two or three months old are fed from that, and also about thirty-five head of yearlings and two-year-olds.

*Question:* What do you put on top of your silos? Do you have waste?

Mr. Trow: The air might spoil it a little next to the staves at the very top, and you might have altogether on the top of an eighteen-foot silo perhaps a load of waste.

MR. ANDERSON: Did you feed all that *stock* off thirteen acres?

MR. TROW: Yes; that is, from silage.

MR. ANDERSON: That is about seventy-five per cent of all the coarse food you gave them?

MR. TROW: Yes; we fed our cows this winter four or five pounds of ground oats with a little corn in it, and what hay they would consume, which was but very little.

MR. WRIGHT: Do you expect to give your cows as much silage as they will eat?

MR. TROW: Yes; as much as they will eat up clean.

*Question:* Have you a stave silo?

MR. TROW: Yes; but a stave silo must be well built and fastened well to the barn to prevent its blowing down. We have a chute between the silo and the barn, but you don't want to depend entirely upon that chute to hold the silo to the barn, because in the summer time the hoops might become loose. We have a guy wire around the silo and fastened to the barn to hold it in place in windstorms. If you build a tub silo get a Washington fir. You can get it twenty-eight or thirty feet long and it will not cost you any more than twelve or fourteen foot lengths. Bevel the staves, and if you are a carpenter, dovetail it, or get it tongued and grooved.

MR. ANDERSON: Have you a roof on your silo ?

MR. TROW: Yes, a roof is all right, a nice shingle roof, but the only advantage of this is in the looks of it. Just take rough boards and you will have a cheap, simple roof that will answer every purpose in keeping the building in shape. It does not harm silage to get wet.

MR. BARNEY: I have one silo and am considering building another. I have considered the matter of building a stave silo. Have you any trouble by ensilage freezing in a stave silo ?

MR. TROW: Right along the sides it will freeze, but keep a spade in the silo and keep it loosened up. In the body it will not freeze, but along the sides, in such weather as this, it will freeze, and if you allow it to stand frozen at the sides it gets thicker. And you want to feed the frozen silage out as soon as it thaws. The King silo, I am certain, is the best silo to build, but the only trouble is the cost, and that is one thing in the way of getting farmers to build them, the matter of expending three hundred or four hundred dollars.

PROFESSOR SMITH: When you feed silage to cows will it not injure the milk?

MR. TROW: There are twelve silos in my neighborhood that furnish milk into our creamery, and I had the honor of bringing the gold medal home in my pocket this year from the National Buttermakers' Convention.

PROFESSOR SMITH: Let me say that I took a ton of milk at our dairy school and took it out to a silo, such as Mr. Trow describes, and ran it through a milk cooler in the silo. I took another ton and ran it through the cooler in the clean butter room, and made it all up into butter. Of course the boys knew how to make it. Sent it down to Chicago to an expert, and he could not tell which was which.

MR. ANDERSON: We are going to build a silo this summer and I would like to ask your opinion of the blower?

MR. TROW: If you have a threshing machine engine, or something that will give you plenty of power, I would advise the blower. If you are short of power use the elevator. If you have not power enough, the blower is a bad thing to have. I know of no other objection to it.

MEMBER: In York state they all have silos. There is one blower used down there that will blow perfectly, and that is made in Ohio, I think.

MR. TROW: I was recently up at one of the best farms in Minnesota and noticed a blower put up at a heighth of about fifty feet that worked very good. I asked the name of it and they said it was the Warsaw-Wilkinson.

MEMBER: How many tons can you put in in an hour?

MR. TROW: About sixty tons a day. That is not working the men too hard. I know there are a good many buttermakers in this audience, and you all want to make good butter. There has been some talk about ensilage making bad milk, and all that. I want to tell you there is no danger from it if patrons look a little carefully after the feeding of it, not put in so much it will lay in the manger and rot, and it is also advisable to feed after milking if you want to be sure not to have any trouble. A few years ago in our neighborhood there was quite a rage on silos, and some buttermakers got an idea that it was hurting the milk. Now I am not making any fling at the buttermakers, but you know it is natural when you have bad butter to try to blame someone else. At one creamery the commission men kicked on the butter and said, "We can not take the butter unless you remove the difficulty." The buttermaker supposed it was the silage and laid it to that, and finally he imagined he found it in the milk, the smell of the silo in the milk of one certain patron of his creamery by the name of Brown. Brown was mortified to have his milk objected to. There was another patron of the creamery by the name of Thorgenson. Thorgenson did not have a silo. One day the two patrons changed cans, Thorgenson using Brown's cans and Brown using Thorgenson's. When the milk come in the buttermaker took a sniff of Brown's milk in Thorgenson's cans and said, "That's good enough," and then came to the cans marked "Brown," turned up his nose and said, "Same blasted silage again." But you must be careful to advise your patrons to be careful in feeding.

THE PRESIDENT: Did I understand that your cutter cost $175?

MR. TROW: A large cutter mounted on trucks.

THE PRESIDENT: One hundred and three dollars without trucks.

MEMBER: Is it not a fact that condensing factories object to silage milk?

PROFESSOR SMITH: The book we use in Michigan as a text-book on silage was gotten out by a condensary. They get 220,000 pounds of milk a day in a condensary within twenty or thirty miles of Lansing, and most of it is made from silage. That is the Gale Borden people.

PROFESSOR MOORE: They will not handle it in Wisconsin and and Northern Illinois.

PROFESSOR SMITH: Well, I understand they are going to cut it out in Michigan. But this much is true, Mr. Chairman, that no force has built up more silos in the State of Michigan than those condensary people. We had a little warning that they are going to make trouble with us next winter, but I don't believe they are going to cut off silage milk. The text-book we are using was written by the vice-president of the Gale Bordon Company, and we are furnishing them milk at the the rate of 220,000 pounds a day, and I will guarantee that 150,000 pounds of butter a day is made from silage milk. But about a month ago there was a little warning given out that we might have some trouble next winter about this silage milk. They have been taking this silage milk seventeen years.

Mr. Trow: From the farmers' standpoint, I must say that we have to have cheap food. We have to use corn fodder. It is the only way to use corn fodder and use it satisfactorily. As I am farming and have to hire most of my help, it would be utterly impossible for me to follow the dairy business if you cut out silage milk, and I would say to those who have not seen the silo and seen silage feed, study it up; visit those farmers that have silos. You farmers who are here today make a careful study of it, see how the cows eat it clean up; and, by the way, when you visit a farmer feeding silage take a little of it home and see how your own cows eat it.

Professor Smith: Do you ever mix anything with the corn to go in the silo?

Mr. Trow: No; always corn. We did once try sunflowers, but it was not satisfactory.

Member: I have used a silo for the last ten years and I have never heard any complaint about it, and the butter sold on the market for the top price. I do not think there is anything in this objecting to silage milk.

Regarding the blower or elevator, I would prefer the elevator. In the blower the loose part of the stalks are blown farther off; by the elevator you get it well mixed. I have used the elevator but I have seen the blower used, and I would prefer the elevator. It gets it in better shape.

Mr. Trow: What do you use, Professor Smith, in your locality?

Professor Smith: We use the blower. With proper distributor, such as Mr. Trow speaks about, I do not think the gentleman would find any trouble; but without it that stuff comes up there with such force that it is unevenly distributed.

Mr. Trow: One word more, and then I am through. That is, do not be discouraged by a visit to a careless farmer that has a silo. Once in a while a man who would make a failure of anything will build a silo. We have one or two such silos in our country. The joists were not strong enough, the building spread, leaving large space which let the air in and spoiled the silage. This is illustrated by the story of a man who wanted to cross on the ferry. He stood on the bank for a long time and the ferryman finally said "why don't you get on if you want to cross?" The man said, "I haven't the money." "Well it only takes three cents." "I haven't the three cents." The ferry man said, "Well, you poor wretch, if you have not as much as three cents you are just as well off on this side as on the other." With that class of farmers I would not advise the silo because they are too careless.

PROFESSOR SMITH: From the looks of the small cornstalks in this country I judge you did not have a very good corn crop last year.

MEMBER: It was all ears.

PROFESSOR SMITH: One thing is certain, Mr. Chairman, all ears are on the corn and not on the people. If it is true that you did not have a good corn crop, if this corn crop in Cerro Gordo county had been put through silos instead of being snapped and you had stock enough to consume it, it would have paid for the silos you will need here for twenty years. I judge from what the statisticians of the West say that you did not have a good corn crop. The gentleman may have been right, it may have been all ears. If you were not going to put it in the silo I would be tempted to feed it from the shock. This snapping of corn strikes the Easterner as being awful wasteful, but it has one thing to commend it. The trouble with the pigs I noticed from Chicago to this section is a weak bone. Your steer does not suffer so much but as soon as you commence to feed it to a dairy cow in the winter you will notice a drop in the yield of a cow that gives ten quarts a day. There is more ash in one day's yield of milk than a steer puts on his back in ten days. The average of the corn plant material is distributed in this way,—half of its ash is in the leaves, only seventeen per cent in the ear. You folks have struck something that the scientists are coming to see what you mean by it. At first they said you did not know what you were talking about; but the farmer generally does not, and we are beginning to see the wisdom of your proposition on that basis. For what you miss in the ears you have the advantage with the parts of the corn that need the ash the worst. You can succeed in fattening your steers on that snapped corn, but when you begin to feed the dairy cow you must turn to the silo because of the mixture of leaves with the ears, just on this basis of ash alone.

MR. TROW: In answer to the question of feeding silage to steers, I notice the Kansas experiment station has issued a bulletin which shows that every ordinary acre of corn that produces ten tons to the acre of green corn, fed in the form of silage to steers, brings a revenue of $32.90. I had a neighbor who fed considerable silage to his steers, about fifteen to twenty pounds a day. I have not done much steer feeding in the last few years. I think it was four years ago that I fed off a couple of car loads, and during that time I fed about ten pounds of silage a day for a time. It seemed to be satisfactory. John Gould, one of the best authorities on silage in the United States, feeds it to all his stock. In fact, I feed it to nearly all my stock.

THE PRESIDENT: We have to leave the silage question, although it is probably the most important question we will have before us at this convention, and possibly we can take it up a little later.

The next paper is by Mr. L. S. Edwards, which will be read by Mr. Smarzo.

## THE RELATION OF BUTTERMAKER TO PATRON

L. S. EDWARDS.

The subject assigned me, ''Relation of Buttermaker to Patron,'' is far too broad to be treated in the short paper I have prepared for this occasion, but I will endeavor to call to your attention a few of the most common influences that may be used to harmonize and increase the close relation of buttermaker to patron.

Only a few years ago all that was required of a buttermaker was to be neat and clean, and to know how to operate the churn; the buttermaker of today must be a thorough business man in order that each and every cent may not only be secured form the milk, but that it is applied to its most needed use in the manner of meeting the running expenses and swelling the checks of the patrons. He must be a good judge of human nature, so as to know where to censure and where to praise; he must be obliging and yet exacting. His is the greatest responsibility for the success of the creamery. In an illustrative way, he is the hub to the wheel that must be supplied with good spokes and these must be the patrons. It should be understood between buttermaker and patron that their interests are mutual and both should work faithfully for the betterment of methods, and so add to the financial success of the creamery.

Misunderstandings, should they arise, should be settled on a business basis and in such a manner as to leave no discord. Nearly all of the unpleasantness between buttermaker and patron arises through the former's refusal or criticism of poor milk. This ought not so to be. A patron should see that it is not to his interest to have a single can of poor milk put into the vat. This is where the butter is to come from, and, to get the best article, it must of neccessity come from a good foundation.

Workmanship rests with the buttermaker, but the flavor of the butter certainly depends upon the quality of the milk delivered. It is a part of the buttermaker's trade to know good from bad milk. It often happens that good milk is put into cans and when it arrives at the creamery the same may be in very bad condition. This is generally caused by unclean cans and surroundings or mode of cooling the milk.

It should be understood by both parties concerned that the buttermaker should be careful and at the same time very firm in his criticisms, and to refuse all milk that will not make an extra good grade of butter. He should also instruct any and all who are at fault as to how to care for both cans and milk to be sent to the factory. The manner of feeding and caring for the dairy cow should be the study of both buttermaker and patron.

Some may think that the buttermaker is no farmer or that he does not know of these things, yet it is a part of his business to know what and how to feed and how to best care for the dairy cow; and so a little talk between him and the patrons may prove of mutual benefit. It may not be possible for the buttermaker to visit personally each and every patron, but he should either do so or use printed circulars and the local newspapers in communication with his patrons on the best known methods of milking, feeding and caring for the dairy cow and her product. Also to be present at all meetings of the stockholders and patrons and each give his views along all lines connected with the dairy business. Keeping in touch with each other's methods and trying to improve on them is a great object to be gained, and I think this is one way of getting everyone interested and thereby results for the good will follow.

A man who is milking cows and sending the product to the creamery certainly does it with a view of financial gain. In other words, it means dollars and cents to him. He should visit the creamery and study the methods used in the manufacture of butter from the milk, especially the points he does not understand. He should know the manner in which his milk is handled, just the same as if it were the cold cash itself. He should familiarize himself with these details so as to better remedy any leakage he may detect in marketing his product; and the buttermaker should deem it a privilege to explain his methods to any who wish it.

The buttermaker, putting out an extra grade article, always has a demand for his butter and at an advanced price over the inferior article. In other words, the consumer is hunting for his output instead of his product wanting for a market. To get this result buttermaker and patron alike must exercise great care in their methods; and to hold it, means never to slack in energy nor be contented, but to try to put out a still better article and more of it. The patrons should start right by selecting good cows, feeding them well and taking good care of the milk. When it gets to the creamery the buttermaker should see that it is handled right and the result will never be in doubt. In this harmonious way the relation of the buttermaker to the patron will always be friendly and profitable and the purchasing public will recompense them for their labor without a word of complaint.

THE PRESIDENT: It is just ten minutes until machinery hall opens, and as Professor Smith, of Michigan, is with us this afternoon, I will ask him to say a few words to us.

## REMARKS.

### PROFESSOR SMITH, MICHIGAN.

*Mr. Chairman*—I fully appreciate the fact that a man that goes from one State to another where the conditions are different must be very careful lest he do more harm than good, and whatever I have to say this afternoon and this evening I want you to have clearly in your mind, as it is in mine, is with reference to the Michigan conditions and what I say, knowing it to be true in Michigan, may not be true here. I was recently down at Rockford, Illinois, at the dairymen's convention there and found things quite different from our State. I have, also, recently been out to Texas, but things true of Texas are not true in Michigan, and I was glad of it. The things I had learned were unlearned there. It was just like (if you will pardon a story) a man down in Texas who had a negro butler, a splendid fellow except he would get drunk. One day when in that condition he broke the best china the man had in the house. The man said "I will teach him." He took up a newspaper that night and when the negro butler came in he pretended to be reading and said ''Just listen, Sam. Mr. Brown's negro, Charles, became intoxicated the other evening and when in that condition he attempted to blow out the lamp, but his breath was so satuated with alcohol that be took fire and blew up.'' ''Oh Gawd, Massey, I will never blows out a lamp again as long as I live'', and so what I have to say may not apply to you. First, what do you want in a State dairy association; who do you want there? What is a State dairy association? It is an organization where we meet together all the factors between the cow and the consumer; it is unified in one gathering all the factors that go to transmit the golden grain of your beautiful prairies into the golden cash of your pocketbooks. What are the constituent elements of such an assembly? First and foremost, the milk producer. Ill fares that association that does not cater first and foremost and largely to the milk producer, and does not secure his presence at a meeting of this kind.

Mr. Chairman, I am not talking after consulting with you or any member of this organization, and I am saying what I believe. Your dairy association will never succeed as it should until you get at its meetings a large representation of your milk producers. Why are they not here? Why are they not at every dairy association? Why were they not at the Illinois meeting? Why not at Michigan meeting? For many reasons. First, the distance they are apart kills the enthusiasm. You men in the cities are enthusiastic because you run up against each other every day; it keeps you warm and enthusiastic. Your farmer has hard work to be enthusiastic, and he does not appreciate the benefits of these meetings as he should; he is a little bit suspicious. I want to make a point, that you must get the milk producers out or you are not doing your full duty. And we want the buttermakers. I tell you it's a good deal to me; how I enjoy meeting buttermakers at meetings of this kind. I had the honor of founding the dairy school in Minnesota; I also had the honor of founding the dairy school in Michigan, and I am proud of it. I am getting to be an old man, and childish, but I am leaving this monument on earth, and I am proud of it.

I believe this, that so far as the quality of butter sent out by Minnesota, Iowa and Michigan is concerned, we have laid relatively too much emphasis on instructions to buttermakers. We have not taught them too much; that is what we should have done, but not left the other undone; we should also have instructed the milk producers.

We are glad to see the buttermakers here and we want the commission men here. We want to keep in close touch from the milk producer to the consumer, and we want the commission men, the machinery men and the supply men, but there is a certain class of people we do not want here. Now God give me strength to say what I mean. There are people that come to these conventions, not hoboes, not criminals; people of good intentions that come to your convention, come to ours. We welcome them as men but unfortunately they come to have a good time. I believe in having a good time, but I pray God to forever keep from us men who come here primarily to have a good time. They will not set the proper limit to that good time. When cold reason is banished by red wine the man ceases to be a soul and becomes a devil, and may God forefend us from the diabolical things that happened last night. If we could, we would banish the whisky element from meetings of this kind. We want to welcome all classes of men to these conventions that are interested in the conversion of corn into butter and cheese, in the making of the products of our farm into things for the community to eat, and we only want to draw the line on people that abuse our confidence, the men that come here not for any legitimate business but to have a good time. That much I have felt, Mr. Chairman, constrained to say, and I thank you for your kind attention this afternoon.

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THE PRESIDENT: I want to say I am pleased the professor spoke as he did, especially the last part of his remarks, and I am more glad that it met with the sentiment it did from the people here, because I believe that he expressed the sentiment of the dairymen and buttermakers of the State Dairy Association of Iowa.

MR. MOORE: I heartily second Mr. Smith's remarks in regard to this unfortunate business and, as president of the Wisconsin Buttermakers Association, which holds its convention the second week in this month, I hope there will be no repetition of the disgraceful scenes which happened last night. I spoke to some of the parties that were responsible for it, and warned them that the buttermakers of Wisconsin would not stand for any such thing.

THE PRESIDENT: Perhaps a little explanation would be well from me at this time. If ever an attempt has been made by the officers of an association, the officers of the Iowa State Dairy Association have made that attempt and worked hard for three years to eleminate this. We supposed we had done it. We have taken the matter up individually; we have gone to different parties individually. We have not posed as cranks, but have talked individually to them and told them what they were doing for the Iowa State Dairy Association, that we would receive the odium of their actions. Everyone who has attended our meetings for the last two years will agree with me that they have been remarkably free from rowdyism of any kind, and it has been largely through the efforts of the officers of this association. We regret the occurrences of last night deeply; no one can regret the affair more than the officers of this association, and we want you to know, and the people of Mason City to know that it is not with the sympathy of the officers of the association that such things take place.

We have an exceptionally fine programme tonight and I want everybody to come and bring your friends. We have Professor Smith on our programme tonight, and we want you to invite everybody in the city to come because we have lots of room. Mr. Lumbard will sing again this evening and we have other musical talent.

We will now stand adjourned until 7:30 o'clock this evening.

The following paper, by Mr. W. S. Laird, was not read owing to his being unable to attend the convention.

## HANDLING AND CARE OF CREAMERY MACHINERY.

W. S. LAIRD, WALKER.

*Mr. President, Ladies and Gentlemen*—The subject assigned to me by our secretary is one I have given careful attention, and I am free to say that as creamery men we have no subject that is of more vital importance to us, to the profitable conduction of our business than the one of handling and care of creamery machinery. The responsibility of every industrial plant rests largely on the shoulders of the operator, and to be successful he must keep himself posted on the latest and most up to date methods in his profession. During the last ten or fifteen years most gratifying progress has been made in the dairy interest, yet there is a lack of competent men to take the responsibility of the work and carry it out properly. I am sometimes inclined to think the machinery used in our creameries, especially the boiler, engine, separator, pumps, churn vats and I may say all other utensils are more or less badly neglected.

*Boiler*—The boiler should be blown off and cleaned out as often as necessary to keep it clean, have a certain day or days of the month for this work. And do not postpone it, as delays are dangerous, when it can be had use a hose with a pressure of water to wash the boiler out, and this helps to keep the boiler clean.

*Flues*—The flues should be cleaned out every day, dirty flues means a loss of fuel. Keep the ash pit well cleaned and you will not be troubled with warping of the grate bars; be sure that the safety valve is in good working order. Keep all valves well packed so they will not leak, and all steam and water joints tight, as thousands of dollars are lost annually in fuel alone.

*Engine*—The engine needs care as well as the boiler. Keep all bearings oiled and boxes tight enough to prevent pounding; do not be afraid that extra time spent in taking care of your machinery will not pay, as a lack of care and good judgment may cause trouble; with all of the work in the creamery, my experience teaches me when machinery runs smoothly is best to let it alone.

*Separator*—The care of a separator should be such as to keep it in good running order. A separator must run smoothly to do its best work. Before starting, see that all parts of the separator are in their proper place; be sure all bearings are well oiled and the bowl filled with warm water. The bowl may tremble a little when starting, but when brought up to full speed it will run smoothly if properly adjusted. The more gradually the separator is set in motion and the more even the motion is kept, the longer the belts will last. Belts are often badly damaged by acquiring speed too rapidly; therefore start slowly. The separators should be cleaned as soon as possible after using them. The longer they remain without being cleaned the more time will be required to do the work. All parts should be washed clean and thoroughly steamed, as this will dry them quickly and they are not so apt to rust.

*Belts*—The belts should not be neglected, do not wait for them to break before repairing them; never put off until tomorrow what you can do today, for procrastination is the theft of time.

*Churn*—The proper cleaning of a churn has often been discussed. A churn can be kept perfectly clean and sweet by the use of hot water and a scrub brush, and steam for scalding.

*Pumps and Pipes*—Fix all pumps and pipes so they can be taken apart and cleaned. Keep all pipes painted. I would recommend aluminum paint, as this gives them a nice, clean appearance, and wears well.

*Walls*—The walls of the creamery should be white-washed at least twice a year; and oftener if necessary. To keep clean lime is a good disinfectant, and not very expensive.

*Machinery*—The machinery and utensils in a creamery are short-lived with good care. Some men handle everything with care; others drop or throw everything they handle. The careful man can save half his salary over the careless man. Do all your work about the creamery in a tidy manner, for constant care is necessary to success, and in no business does this show more plainly than in the creamery.

I thank you.

## THURSDAY EVENING SESSION.

Meeting called to order at 8 o'clock P. M. by the president.

The meeting was opened by a vocal solo by Miss Maud Blythe, of Mason City.

THE PRESIDENT: We are going to vary the programme a little and will give you next a buttermaker. We have with us one of the winners at the St. Louis fair last summer in the six months' contest, one of the best buttermakers in the State, Mr. Johnson, of Arlington.

W. B. JOHNSON, Arlington: Mr. Chairman, Brother Buttermakers, Ladies and Gentlemen—This afternoon you listened to the way the different speakers felt. I feel somewhat different; I feel very much like the new minister at a new place, after a sister of the church had finished her remarks of congratulation, winding them up by saying "we might have got along with a better and cheaper man, but we did not know where to find him." I suppose the committee meant well in this and I will ask you to overlook their mistake. I will not detain you very long.

View on Iowa State Fair Grounds, fair of 1904.

# AN UP-TO-DATE CREAMERY AND WHAT IS REQUIRED.

W B. JOHNSON, ARLINGTON.

The requirements of an up-to-date creamery are very different from the requirements of most any other source of industry. It also differs within itself according to conditions and surrounding circumstances whether it be of a gathered cream system, a whole milk plant, or a creamery where both milk and cream are received and the different classes of people with whom you have to deal. The requirements in each of these in some respects are the same, while in other ways there is a wide difference. But I will try and give, as briefly as possible my idea of an up-to-date creamery and its requirements where the existing circumstances are favorable and where nothing is received but whole milk. Among the first requirements of such an enterprise comes the building and its location. The location is a feature which means volumes, financially, to a party or parties owning or operating the same and should be duly considered—always selecting a high, dry location where there is a quick drain, not down in some slough or down some back alley but in a convenient and sightly place, where the sunshine can reach the building and the light may not be obstructed by the interference of other buildings. The building, if possible, should face the south, being built substantial, warm, and finished on sanitary principles. It should be divided into departments, whereby each department may have its own advantages, good cement floors, plastered walls or papered and then sealed. or a combination of both according to the material used in the outside structure. It should also have good high ceiling, plenty of light and be well and properly heated and ventilated. Here is a point where little or no consideration is given. Ventilators in the roof are not sufficient. The operating room and butter room should be provided with a pipe or flue, starting from near the floor over the gutter and extending through the ceiling and roof to rid these rooms of all impurities and at the same time carrying out the cold air from the floor, leaving the fresh and pure air in its place.

Proper heating and ventilating will do away with wet, dripping ceilings and a great part of this dampness which is a source of trouble to the operators and is one reason why so many of the boys have to give up the creamery work and devote the remainder of their life to the endurance of rheumatic pains. The building being completed and equipped with machinery of the best and latest improvements that money can buy certainly are the starting points of an up-to-date creamery.

Of course it is generally supposed that where such an outfit is found, that the enterprise is well patronized and well officered as president, secretary, treasurer and board of directors, men that are noted for their success, their business ability, and men that are of the progressive nature; men that are influential and are not afraid to stand for principle and right, and help to improve conditions in general.

The next requirement of an up-to-date creamery is a man to manage and direct, and set in operation that which he has charge of. This is the man that gives his time and attention to the duty of operating and managing the affairs of this enterprise; the man that has the responsibility resting on his shoulders and the man in whom rests the success of or failure of such an enterprise to a great extent. The buttermaker must be a master of his profession, he must understand creamery machinery and its care, and be capable of regulating and correcting any minor trouble with the same which may occur at any time; he must also understand the culture and starter question—how propagate at starter and carry it on to make a success of it; he must be a judge of a good starter and never use a poor one. In the handling and propagating of starters lies one of the greatest, if not the greatest secret of buttermaking, but there are still other things that are very essential. He must keep or see that everything is kept in the most sanitary condition, using lots of hot water, steam and cleaning material, such as a good soap powder, a brush and plenty of elbow grease with energy to apply; using a good disinfectant under vats, in the gutter on the floor, and any place where there is the least chance of any foreign matter which might transmit any abnormal flavor to the cream or butter. I would suggest a rinse of lime water or a solution Kno-germ used frequently.

The buttermaker ought to be of an instructive nature, capable of impressing upon his patrons what is most needed of them, to aid him in the requirements of an up-to-date creamery, and in making suggestions do it in such a way as to cause no offense but in a kind and instructive way whereby the desired results may be obtained, beneficial to all and in all ways and at all times, meeting the requirements of the trade by producing a fine grade of butter, thus obtaining a fancy price for the same, whereby the patrons will get value returned, giving satisfaction in general, and through firmness and kindness on the buttermaker's part, bring to bear upon his patrons an interest and desire to see and help the enterprise to flourish in its continuance as to what it now really is, an up-to-date creamery, with but one further requirement, that of using good judgment, due consideration, and by doing the best that can be done so far as our knowledge will permit to maintain and improve what we now have, an up-to-date creamery, in which we take pride. Summing it up, we find that in order to be classed as such, we must have location, building, equipment, management, a good buttermaker, and last, but not least, cleanliness.

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## DISCUSSION.

MEMBER: About the ventilation of a creamery; will the ventilation Mr. Johnson spoke of keep the ceiling dry?

MR. JOHNSON: It will help to a great extent; not only that, but where we ventilate a building with ventilators in the ceiling we are taking out the best of the air and leaving the contaminated air where it remains; while if the flue comes near the floor, it will carry out the cold air and the condensation will not be so thick at the ceiling, and it will help condensation forming in drops. That is the point I wish to make. Most creameries built with ventilators in the roof, if you will notice, are troubled more or less with dripping walls in cold weather. If we should take out the cold air and leave the warm air in the condensing will not be so thick, and it will stop to a great extent the condensation on the walls.

MEMBER: In several places I have visited they have a coil of pipe about eight inches wide running from the ceiling to the smokestack. The smokestack carries out the moisture so it keeps their ceilings dry.

MR. MOORE: Your system of ventilation corresponds somewhat with the King system, dosen't it Mr. Johnson?

MR. JOHNSON: Yes, sir; on the same principle.

MR. MOORE: It strikes me it would be a good thing for the buttermakers to remember that this would be an ideal system for the farmers to put in their barns.

MR. JOHNSON: It would be a proper system for them to use. Have fresh air come in three or four feet from the floor, then a pipe run up so as to distribute the pure air as near as possible to the ceiling. It will gradually spread out and come down and we have pure air instead of foul air, and it takes out the impurities from the room.

PROFESSOR SMITH: Do they ever build creameries here of cement? They build brick and cement in Michigan and as for the ceiling inside, we can wash it off.

MR. ANDERSON: We have a creamery here built of cement and brick from the floor up.

PROFESSOR SMITH: Let me ask another question. Two creameries well built and well equipped in every way are fairly near each other. A farmer within a mile of creamery A and ten miles from creamery B delivers milk to creamery A that is not fit to take. The buttermaker says, "I do not want this milk; I can not use it." Then the farmer says, "All right, I will take it to creamery B," and creamery B knowing it is not fit to take, takes it. Do you have any trouble in that way?

MR. JOHNSON: I do not know that I have ever had any trouble along that line personally, but there are cases where they do. It depends a good deal how you come at your patron, in the way you speak to him whether he will take offense and deliver the milk to the other place rather than clean up.

MR. PRESIDENT: About two years ago, I think it was, I was making a trip through Michigan. I went from the southern part of the State through to the northern part, and the latter part of the journey was taken after night. It was one of those trains with a day sleeper, that is, you can sleep if you want to, and sleep if you can. There were several passengers, and we did not arrive at our destination until after midnight, and there was a man sitting in the back end of that car that got to sleep before any one else, and he did not let anybody else sleep at all. Now, we have that man with us tonight, and he is going to talk to you next. I will not tell you who it is, but I will introduce Mr. C. D. Smith, of Michigan.

## THE VALUE OF CORN FOR MILK PRODUCTION.

PROF. C. D. SMITH.

*Mr. Chairman and Gentlemen of the Iowa Dairy Association, Ladies and Gentlemen*—I am glad, at the outset, to obey the command of our Governor, Fred. M. Warner, himself a dairyman and cheese manufacturer, and to extend to you the best wishes of the Michigan association, of which organization the Governor is president. Michigan has deemed it wise to select as its chief executive a man who thus filled the office of president of its dairy association, and Iowa might follow her example with profit.

It is good for a man to travel occasionally, to see what others in his line of work are doing, and it is a great pleasure to me to visit Iowa, the banner corn State of the Union, to note your methods and results and to carry back to my own State valuable lessons for our farmers.

It is no light matter to be the banner State in this great Union in any line. In coming to Mason City from central Michigan, I have traversed as great a distance as separates the most widely divided of European capitals. I have passed, in that journey, as many hives of human activity, as many great manufactories, as many great marts of commerce, as many schools and institutions of learning, and better than all, as many happy homes as I could find in any journey of similar length in any part of the world. Indeed, I have passed the boundaries of many autonomous states, yet no lexicon has been required to interpret a varied tongue, no customs officer has inspected my baggage, nor uniformed inquisitor demanded my passport. No officer has hindered my going in or coming out. Though organized in different states we are one people, and owe our first allegiance to one government, citizens of one glorious Republic. May the day be far distant when a man shall consider it a greater honor to belong to any State, no matter how rich or delightful, than to be an American citizen, at once a citizen and a king.

Although strongly tempted to burden this paper with many statistics to show how far the wealth of this country is predicated upon the corn plant and its products, I am going to refrain altogether and shall pass at once to a discussion of the conversion of corn into wealth through the avenue of the cow. I must stop long enough, however, to call your attention to certain dangers which threaten the State because of the ease with which corn may be converted into cash.

You are, for the most part free from one trouble which afflicts Michigan. You are younger and the troubles of middle life are not yet upon you. In Michigan, the early settlers are all gone. Their sons now own the farms and are becoming advanced in years. The grandsons have come west to aid in building up Iowa or gone still farther west to populate the growing cities of the coast or the hither side of the Rockies. The homes of these old Michigan farmers are left unto them desolate. Most of them have foolishly left farms to seek comfort and happiness in some inland city or village. I say foolishly, because in almost every case these people are searching for happiness where, for them, it can not be found. A man is a creature of habit and finds pleasure in continuing the activities which habit has made pleasant no matter if inherently disagreeable. A letter carrier had had no holiday for twenty years. He was granted leave of absence for two days. On his reporting for work again, his comrades asked him if he had had a good time and what he had done. He replied that he had enjoyed himself immensely and had spent his longed for vacation in walking his beat, going over the same old route.

A farmer, accustomed to the life of his farm home, to the broad views from his farm house windows and the broader liberty of the country can seldom be content in the narrow streets and the cramped surroundings of the village or city. It is folly to make the attempt to do that which so many have failed to do.

It is bad to have the boys go west or to the great cities, but it is useless to try to dam the current. The great cities can not live, can not exist without the constant influx of fresh and stronger blood from the country. The city boy is hampered by the fact that very early in life he does not acquire habits of self-denial and devotion to work. The country boy must get up early in the morning, long before breakfast to accomplish the regular task before starting for school. There is stock to be fed, wood to be carried in, chickens to feed, sheep to care for and cows to milk. These things must be done morning after morning and night after night. The boy grows up with the habit of doing things regularly and in the right way, whether disagreeable or not and that habit becomes an invaluable asset to him through all his later life. Character itself is but the soul as controlled by habit and these habits of self-denial, industry and perseverance in the face of obstacles can be acquired with difficulty and then but defectively later in life. To speak the language of business without a halting brogue we must acquire it early. The country is therefore the breeding ground of the city.

The emigration of these country boys has left a large minority of Michigan farms in the hands of tenants. May the day be distant when absentee ownership shall become notable in Iowa. It is an un-American condition and fatal to the best interest of the State. Neither the landlord nor the tenant will adopt good methods of dairy work, the former because he does not work the farm and the latter because he does not own it. The silo is tabooed and progress made impossible.

The remedy is easy to suggest but hard to apply. Educate the country boy and make the farm pay. Raise corn, but feed it on the farm. Feed it to what? You can feed it to hogs and make money, but swine feeding will not tend to keep the thinking boy on the farm, because, with all due respect to the skill required to grow a good hog economically, the business does not demand the versatility of skill required in the better types of dairying. Feed it to steers and make money? Yes, I have no objection to this proposition and if the young man has not habits of patience, perseverance, attention into detail and courage, he would better stick to steers rather than the dairy cow. There is much room left for intelligent steer feeding in this and every other State.

Did you ever think of the contrast between the steer and the dairy cow both in the quantity and the quality of their performance? If not, here are some figures that will interest you: A certain cow at the Michigan Agricultural College threw down in her milk an average of eighty-five pounds of dry matter, total solids per week, 12.21 pounds per day. Of course she was a large cow and an extraordinary milker, giving about a hundred pounds of milk per day. A year later when drying off she gave us over four pounds per day of solids. Now it is a mighty good steer that will gain three pounds per day in gross weight and some share of this gain is made up of water. It would take therefore a good half dozen prime steers to eat, digest and assimilate as much as did the one dairy cow.

An examination of composition of the gain and of the milk solids would show that the cow gave in her milk, ten times as much protein as the steer would store up in his gain. The cow is therefore the banner animal on the farm as far as ability to give a good account of a large amount of feed is concerned. Cows vary in their abilities in this respect and the wise dairyman selects his heard carefully with the Babcock test and the scales, ruthlessly destroying all cows which do not give large and paying yields of rich milk. Michigan dairymen are doing this more and more. Each mess of milk is weighed in many herds and the owners find that it pays to go even to this extreme, pays in the increased interest taken by the milkers and the consequent larger and more persistent yields, pays in the knowledge gained of the individual cows and in the indications given of approaching troubles avoided by the prompt application of needed remedies.

With carefully selected cows, the dairymen will see to it that while corn is the basis of his ration he will have other, more nitrogenous feeds to supply the demands for the casein of the milk. He will try to grow these protein feeds. He will grow alfalfa if he can. He will see to it that the roots are properly covered with tubercles and that therefore the chief supply of nitrogen to the crop is the free air overhead and not the limited nitrates beneath his feet. In Michigan, alfalfa is still in the experimental stage and the end is not yet. In Iowa it should succeed better and become a permanent member of the lists of forage plants. It fits perfectly into the corn and corn fodder, making a complete ration for the dairy cow. Have the seed or the soil properly inoculated with the germs needed to make the nodules. Write to your experiment station in this matter.

Try also soy beans for grain and hay but do not use them in the silo. I do not know why they do not make good silage but so far the forage seems to give a taint to the milk and to be otherwise objectionable in the silo. Use it therefor as hay or as grain to add protein to the corn ration. Here, again, there is call for inoculation. One acre of soys at the college yielded but sixty-seven pounds of nitrogen when roots were not inoculated while the adjacent acre with inoculated roots gave one hundred and fifty-two pounds. Note the very important difference.

With all your search after new legumes do not neglect the clover as an adjunct to your corn crop. The clover is an old stand-by. In one of our experiments we washed out the roots of the clover, in part of a field yielding a ton and a half to the acre of dry hay, and weighed and analyzed them. We found that the roots alone gave us as much plant food as would have been supplied by nearly ten tons of good barnyard manure per acre. The clover is the crop which furnishes plenty of cow feed yet leaves the field richer for having produced it. Moreover this plant food was so well distributed through the soil that it furnished support to the succeeding crop just when that crop needed it and just where the roots could best get it. Michigan farmers are adopting the rotation of corn, followed by wheat, followed by clover, followed by corn. They plow under all the manure on the clover sod and plant to corn which is kept well cultivated killing all weeds. The wheat is put on the corn stubble without plowing and the clover is seeded on the wheat without plowing. Thus they get a legume between two cereals, get plenty of bedding and plenty of the best cow feeds. I do not know that the rotation would appeal to Iowa farmers.

I do not know that your conditions are sufficiently like ours to warrant me in urging upon you the importance of the winter dairy. Corn is fed, naturally, largely in the winter. We are urging in our State, therefore, that the calves shall come in the fall. The calves do better; they are fed under cover, are fed regularly, grow through the winter and are ready for spring pasture and are big enough at fly time to stand the discomforts of that trying period without setback. The cow too gives much more milk where calving in the fall than when coming fresh in the spring. Finally it is better for the farmer, as far as his help is concerned, to produce the most milk in the winter and better for the country to have the factories run the year round, giving the buttermaker steady work and the patrons steady cash. This will mean an increase in cows until the hand separator will be an unnecessary implement because there will be a steam machine at every crossroads to skim the milk of a thousand cows within the radius of a mile. Then the stables will be furnished with proper stalls to keep the cows clean and the business will be pursued with intelligence, energy and success.

Turning now to the technical side of my topic, I shall assume that the word corn in the title refers to the whole plant and not to the grain alone. It is well to note something as to the distribution of the several food constituents in the various parts of the plant. Let us take a hundred pounds of the dried plants, ears, leaves and stems and see how the materials are divided among them.

As to the ash, needed for bone making and for other purposes in the animal economy, we note that one-half the content is in the leaves and but 17.40 per cent in the ears. If the corn is fed through the silo this fact will make but little difference, but where the ear is fed alone, as to swine, it is an all-important consideration.

Of the total dry matter in one hundred pounds of corn plants, forty-six per cent is in the ear, twenty-two per cent in the leaves and thirty-two per cent in the stalks. Less than half of the material is therefore in the ear and if the stalks are wasted, with them would go more than half of the dry matter.

Almost exactly half of the protein is in the ear, 33 per cent in the leaves, and 17 per cent in the stalks. This is a very important matter. Note that but half of the protein, this most important food constituent, is in the ear and where the stalks and leaves are wasted, half of the protein is wasted, another argument for the silo. Mr. Trow has handled the silo topic so well that I shall not attempt to add anything to his statement farther than can be drawn as necessary inference from what I must say. The fact that half the protein is in the stalks and leaves shows the wisdom of using the method, the sole method which saves leaves and stalks in form to be eaten by the cows. Note farther, that one-third of the total protein of the plant is in the leaves. They must be fed. In all the earlier stages of the growth of the plant preceding maturity, the bulk of the protein is in the leaves, and it is not until the ripening process is well under way that it is transferred to the ears. On seventh of September, for instance, in a certain year, 40 per cent of the protein was still in the leaves Note, too, that the stalk contains but 17 per cent of the total protein of the plant. Remember, too, that this protein is digested with difficulty by the cow, because, especially in the lower part of the stalk where it is coarse and woody, it is encased in fibrous material. Experiments have shown that often it takes as much energy to digest this coarse stuff as it furnishes when digested. It is not certain, therefore, that the saving of the butts of the stalks is really a contribution to the supply of desirable food stuffs. Perhaps we have argued too much from the analyses of the chemist as to the real value of these lower parts of the cornstalks, and it is not yet fully settled that the losses through Iowa are as great as was at one time thought, due to the waste of the coarser parts of the stalks, left in the fields to be plowed under.

Not far from fifty-five per cent of the starches and sugars of the entire plant are found in the ear, about thirty per cent in the stalk and but fifteen per cent in the leaves where they would be washed out by rains. Note, though, that all these figures do point to the economy of saving leaves and stems to feed with the ear.

A long series of experiments show that the gross weight of leaves on an acre of corn does not increase after the corn is in the milk; the weight of the stalks remains about constant but the ear does increase in weight rapidly.

The question when a field of corn contains the greatest amount of valuable feeding material is an important one. In Michigan after about the 25th of August in an average year, when the corn was in the roasting stage, there was no increase in the average weight of a stalk of corn bearing an ear. There was of course and increase in the weight of the ear owing to the migration of material from the stalks to the ear but there was not an increase in the weight of the plant as a whole. On August 10th a certain field of corn was in full tassel. On the 25th it was in the roasting stage, on the 6th of September it was glazing and on the 15th was fully ripe. I am going to insert a table here which I shall not read but which I shall ask to have printed.

YIELDS PER ACRE OF GREEN FODDER, DRY MATTER AND NUTRIENTS.

| Date. | Green fodder, pounds. | Dry matter, pounds. | Protein, pounds. | Starch and sugar, pounds. | Fat, pounds. | Fiber, pounds. |
|---|---|---|---|---|---|---|
| August 10 | 21,203 | 3,670.24 | 472.73 | 1,828.15 | 67.90 | 1,010.05 |
| August 25 | 25,493 | 5,320.39 | 576.08 | 3,212.45 | 143.11 | 1,148.67 |
| September 6 | 25,865 | 7,110.29 | 711.03 | 4,554.14 | 199.08 | 1,294.78 |
| September 15 | 23,007 | 8,020.24 | 696.96 | 5,356.72 | 242.61 | 1,413.17 |

The table teaches us that there is a rapid and regular increase in gross weight of crop up to time of glazing. Thereafter the changes are not in increased weight but in the displacement of water by dry matter. Between the time when the corn was fully tasseled and the roasting stage there was an increase of forty-four per cent in dry matter. From roasting to glazing there was a gain of thirty-three per cent and, from glazing to full ripeness there was a gain of one-eighth. To secure the greatest yields of dry matter from an acre of corn it is necessary to allow the corn to stand until fully ripe. The greatest yield of protein per acre is obtained when the corn is between glazing and full ripeness, but thereafter there is a gain in both starch and sugar on the one hand and fat on the other.

In conclusion, I can not refrain from calling your attention to the enormous yields of feeding stuffs which the fields of Iowa produce. Multiply the figures given in the table above by the number of acres in corn in the State and imagine the number of dairy cows it would feed if economically managed. I am not unmindful of the fact that your cow owners are not primarily dairymen, but that in many instances they are dairymen by force of necessity. They are keeping cows to raise beef steers and send the surplus milk to the factory. This is a low type of dairy work and does not forebode great dairy success. It means cows selected for beef quality. It means neglect of dairy quality, with little testing of cows and less selection for dairy capacity. It means no rapid advance along dairy lines, except in so far as these men may be induced to drop the beef idea and develop the milking quality of the cows. We have dairymen in Michigan who sell from their farms nothing but butterfat, young stock and pigs. Where that method is being pursued the farms are growing richer and the dairymen better posted and better men. In such conditions the hired help problem is solving itself, troubles are growing less and advantages greater. I long for the time to come in Iowa when her farmers will turn their attention more and more to feeding the corn crop intelligently to dairy cows, dairy cows—mind you—and will lay less and less emphasis upon beef. Then will come the days of her greatest prosperity. Then her young men will recognize the farm as the situation of greatest opportunities, then her future is assured.

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## DISCUSSION.

MR. ANDERSON: I would like to ask what kind of cows Mr. Smith uses. Do you buy or raise them?

PROFESSOR SMITH: Now remember I am speaking about special dairying, to go into the business for making butter. We use Holsteins, Jerseys or Guernseys, because we find in those breeds more cows that make a given quantity of butter from a given quantity of feed; but we select those cows. We understand that there are just as poor cows among the Jerseys as anywhere on earth; just as poor among the Holsteins, but having once gotten good cows we raise our own future herd. If you can get good milking Shorthorns out here stick to them.

MEMBER: The professor stated they were not succeeding with alfalfa. I would like to ask what became of the Turkestan you experienced with a few years ago.

PROFESSOR SMITH: The Turkestan variety does not do as well with us as did the Grimm or Colorado alfalfa. The Turkestan alfalfa does not do well with us and it will not with you, not nearly as well as the alfalfa will from Colorado, or North American seed. Do not get the European seed. Send to Dr. Moore, at Washington, to your own experiment station and get the proper material for inoculating that seed. Don't sow any alfalfa without that. Field after field of alfalfa that I have examined that turned yellow, when I came to look at the roots there were no nubbins on them.

MEMBER: Clipping alfalfa would save the crop.

PROFESSOR SMITH: No, we always clip alfalfa two or three times. We have some stands of alfalfa that are doing first rate. I remember one field that has given us ten tons of good alfalfa hay the last two years. That is five tons a year; but the trouble is I remember a half dozen other fields that are total failures. It is still in the experimental stage.

THE PRESIDENT: Those who were at the opera house last evening were honored by the presence of Mr. Lumbard, who promised to be here again this evening and favor us with a song.

Vocal selection "I Fear No Foe" was rendered by Mr. Jules Lumbard, who responded to an encore, entitled "Maggie."

THE PRESIDENT: The next on the programme is a man who needs no introduction to this audience, a man who has probably done as much, if not more than any man in the State in the upbuilding of the dairy industry in the State. I have the pleasure of announcing to you that the next subject on the programme is "Qualifications of a Good Buttermaker," by Professor McKay, of Ames.

## QUALIFICATIONS OF A GOOD BUTTERMAKER.

PROFESSOR MCKAY, AMES.

*Mr. President, Ladies and Gentlemen*—I can assure you it is a pleasure for me to be present at this meeting. I am always pleased to meet with the dairymen of Iowa, the traveling men and the commission men from adjoining states. During the past few days, as many of you know, I have spent the greatest portion of my time judging butter, sampling butter, consequently I am not in very good condition to talk this evening. The past week I had the same experience in Canada, so I am pretty well buttered by this time.

Our friend Professor Smith, of Michigan, spoke this afternoon about how generous the people of Michigan treated the dairymen of the State. In the Province of Ontario, which has a population about the same as Iowa (two and a half millions) they have three dairy schools; they give to the dairymen's association $5,000 annually; they have twenty instructors in the field, we have two; so you can readily understand the condition of the dairy business in the Province of Ontario.

We have done, I think, excellent work, especially uring the past two years. Professor Smith has mentioned the fact that we are the banner State in corn. He should have mentioned the fact also that we are the banner State in butter. We hear a lot about butter from the Esquimaus of the frozen North, but when it comes down to butter making we produce more butter than any State in the Union.

In discussing the qualifications of buttermakers I would say that it is well to have some understanding about what kind of maker is wanted. We have the makers of dairy butter, and they are many in number. With your permission I will review the various methods used in butter-making, and the many changes that have taken place during the past twenty or twenty-five years. First, we have the shallow pan system of creaming, then the deep setting system. These both have their good features. Then we have the whole milk system, which has resulted in producing better butter than any other system ever originated in this or any other country.

Now, we have in many places the so-called hand separator system or the central plant system. Most of these require special buttermakers or buttermakers with special training in that direction.

When I was a boy it was a common thing to hear the remark that Mrs. or Miss So-and-So was the best buttermaker in the community. Now, if it had been said that Mrs. or Miss So-and-So was the cleanest maker in the community the statement would at once have been challenged. Nevertheless, there was considerable truth in the statement.

We find in taking up butter that flavor counts for about half the total in scoring. The kinds of bacteria that produce the desirable flavors thrive best under the most perfect sanitary conditions, therefore a good buttermaker must be a clean person, whether in the dairy or the creamery. That old saying that "Cleanliness is next to Godliness" is certainly true in butter-making. Ordinarily, in dairy butter-making, where the maker has entire control, if perfect sanitary methods are used the flavor will usually be all right. The skill of coloring, salting and working can soon be acquired by a person of average intelligence, yet we find hundreds of thousands of dollars are lost annually because our dairymen can not make good butter.

We have a great industry flourishing in our country, making the so-called process butter. The whole business is based on the ignorance of the dairymen as they furnish the material to keep the process factories running. This is not only a disgrace to the dairymen of our country but to the dairy instructors as well. In this age of enlightenment along the various lines of agricultural pursuits it should not be necessary to have these large factories established for renovating or making over a great portion of the dairy butter.

The milk used in making this butter in the first place was undoubtedly as pure as that which goes into butter that scores 97 or 98. Therefore we find that a lot of the dairy buttermakers do not understand the underlying principles of buttermaking. Anything in the form or shape of butter that is worked up in a lump or grease can be sold or traded to the groceryman for goods at some price. The groceryman knows that he can throw this stuff in a barrel in the back of his store and keep it there for weeks or until he gets an old salt or sugar barrel full and then dispose of it to the process man who melts it so as to remove all the oil or fat from the other constituents. By forcing air through this oil the disagreeable odors are carried off and then by the addition of sour milk or starters a new flavor is added. The result is that what was once an unsalable mess of grease is changed into a fairly good grade of butter, and the process man gets the profit, and this class of dairymen proclaim to the world that dairying does not pay, and it certainly does not pay them, owing to their lack of skill. Now dairymen should make the finest butter possible as they have the whole business under their own control.

I once heard an address on the requirements of a buttermaker and from all the necessary qualifications described it would be about impossible to find a person competent in all respects. Among other things he said they should be as wise as a serpent, as harmless as a dove, with a nose as keen of scent as a fox hound, and should possess the wisdom of Solomon.

What I think is most needed in a creamery buttermaker is a well developed sense of taste and smell, a good constitution, a willingness to work, an inherent love of cleanliness and order, a knack of getting along well with patrons and the public, and a thoroughly honest man who will always look after the best interests of his patrons and his employer.

The cry at the present time seems to be for licensed buttermakers, and I feel sure that this is coming, as well as licensed factories. You can not have one without the other as it is almost impossible to make good butter or cheese in some of our factories or creameries. The licensing of makers and factories would have to be on a sliding scale. It would not be sufficient to give a maker a certificate just because he passed a successful examination, and make this good for all time. He should be compelled to keep up the good work. With a factory, it may be in good condition this year and poor next year, so the whole question of granting a certificate to makers and factories is a very complex one, which will need lots of work to make it successful.

One of the great drawbacks to many buttermakers is the lack of cleanliness in personal appearance. It is about useless for a maker whose clothes are so stiffened with dirt and grease that they will almost stand alone to talk to patrons about keeping their cans clean and sending better milk or cream. It does not take patrons long to size up the maker.

Letters or notes sent out by a maker in charge of a plant should always be neatly written with ink on clean paper. A plain letter-head with maker's name and name of creamery imparts a business air that is not lost on patrons or public. Of course, all can not write a good hand or perhaps spell every word correctly, but do the best you can always. It pays to be careful and to do everything in your best possible manner. It is the keeping up of the little things that count in the end, finishing each day's work; never putting off until tomorrow what can be accomplished today.

The maker who does his best, regardless of wages, is sure to get to the front. A little extra time spent in improving your creamery inside and having neat surroundings, a flower bed or two and an appropriate name for the place pays. These things may not be noticed at first, but employer and patrons will take more pride in their creamery, and if you are turning out fine goods it is only a matter of time when you will be recognized according to your ability.

And now, before closing, I wish to speak a few words to creamery managers. If you have a good buttermaker, do not be afraid to pay him a reasonable salary. Fifteen dollars or twenty dollars a month on a maker's salary practically amounts to nothing as an inferior maker can lose you two or three times that amount in a single day.

I want to condemn in the strongest manner possible the method used by some of our creamery managers, especially in some co-operative plants. I have had a number of inquiries during the past year, wanting makers with apparently no other object in view except bringing in competition to compel their makers to accept lower wages, as I have heard from a number of such creameries where the old maker has been hired at reduced salary.

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THE PRESIDENT: Would anyone like to ask the professor any questions? If not I wish to make a few announcements before closing.

Tomorrow forenoon is the meeting of the National Dairy Union in this opera house. We feel that we are entitled to a good audience, and I want to urge you, not only to stay over, but to stay over and come to that meeting. We will convene at 10:30. I believe you all appreciate the importance of this meeting. We have been obliged to come before you before and make excuses for the non-attendance of dairymen, but we do not believe it is because you have not enough interest in it, but we feel that we want the encouragement of your presence at this meeting tomorrow. At different times we have been up against some pretty hard propositions, but the support of our members and the interest you take encourages us to believe that you are back of us.

I believe that the last six months has demonstrated to you the value of your organization. I do not think there can be any question of that, and I want to again urge that you stay over and attend the meeting tomorrow morning. We have a good programme for the entire day and it will pay you to wait for it.

PROFESSOR MCKAY: I would like to say a word. It has been announced on the programme that I would go through the butter-room tomorrow morning, show the buttermakers their butter and point out defects and suggests remedies. I went through the butter-room this morning, not knowing that this was on the programme, but I will stay over and spend an hour or an hour and a half with the buttermakers, commencing at 9 o'clock I shall be pleased to meet those buttermakers who have not seen their butter today, go over their butter and suggest remedies to improve the quality of their butter.

HON. H. R. WRIGHT: The committee on resolutions has two or three resolutions which they desire to present at this time. There has been one subject of conversation on everybody's tongue today, but I do not intend to discuss this matter at any length except to say that the shameful and disgraceful occurrence of last evening cast a stain of disgrace upon the association here and upon every individual member of it.

After consulting with some of the members of this association, the committee on resolutions offers the following resolution, in order that the public may understand in a formal way that we deplore that occurrence and the facts which led up to it, and which for so long have weakened the influence of this association, and which possibly seem about to destroy its usefulness altogether. I ask your attention to the reading of this resolution because I propose to move its unanimous adoption.

*Resolved*, That we earnestly condemn the drunkenness and criminal rowdiness that has marked the conduct of a few attendants at this meeting, and that we sincerely regret and deplore the sad results of such conduct on last night.

*Resolved*, That we demand that all firms and companies who send representatives to this association shall keep away from its meetings those of their men whose presence tends to drunkenness and rowdiness.

*Resolved*, That this association will no longer tolerate the presence of such persons and we insist that they refrain from attending the meetings of the Iowa State Dairy Association.

Motion to adopt resolutions unanimously, being made and seconded, the motion was declared carried.

Whereupon meeting adjourned.

## NATIONAL DAIRY UNION MEETING.

### FRIDAY MORNING, FEBRUARY 3, 1905.

President S. B. Shilling in the chair.

Meeting called to order at 11 o'clock by the president.

THE PRESIDENT: I want to say to you that if the people of the United States who are interested in the welfare of the National Dairy Union were as economical with their money as their presence at our meetings, we would quit. There is the mystery, how they will contribute money to us and give us everything we ask, and then leave it entirely to us as to how we spend it, or what we do with it. I am not going to make any lengthy address, because I promised at the hall if you gave us an hour we would try and let you off in that time. I simply wish to make a few statements and it does not seem necessary for me to even do that. It seems to me that it must be known to everyone of you that if we have ever seen the necessity of maintaining this organization we have in the last three months. So far as my work in connection with the National Dairy Union is concerned, it has been a pleasure, as a rule. There are some things about it, of course, which has been more or less disagreeable. I am the person who does the begging. My duty is to provide the funds to run the organization; your secretary has invariably taken charge of all the legislative business. He has been in Washington in the interest of the organization, as most of you know, and he has also looked entirely after the legal affairs of the organization.

Now it seems to me that simply a report of what has been accomplished by the new oleomargarine law would be sufficient to convince anybody of the benefits of the organization. It seems to me that the prices we are receiving for butter this winter should not be attributed to any other reason in the world excepting the protection of butter by the law that the National Dairy Union succeeded in passing and enforcing. I believe all this should entitle the National Dairy Union to recognition, and

I am glad to stand before you and say that we are receiving that recognition, and we appreciate it. I just handed Mr. Knight a letter from Chicago, forwarded to him here, and when he opened it he said "Sam, we can't get away from them anywhere."

I hardly know what to say to you—the crowd is so small. You appreciate us, we know. We have a representation of the people left in the city. We are laboring under the difficulty of having the worst weather we have had this year, and I want to say to you that we do not take it as a lack of appreciation of our efforts that our meeting is not better attended.

I want to make one more point from a farmers' standpoint. and engaged in the dairy business. I take this view of it, that the dairy industry today of the United States is absolutely the only product, the only industry of the farmer that is protected. That may seem to you to be a strong statement; it may seem arbitrary, but I am candid when I say that the only commodity we are selling today off our farms that is absolutely protected to us, where the price is regulated by supply and demand, is butter. I am also happy to say that in the National Dairy Union organization we have the only organization, I believe, today that ever undertook to accomplish a purpose, and that purpose the protection of an industry and has been successful in achieving everything they started out to do, and has gone through every legal phase of the question and never lost a suit.

The officers of your association do not take credit for that. We are only the instruments in the hands of the dairymen; they have been back of us, have expressed their wishes and we have tried to carry them out. I want to say further that if the beef product of the country, the hog product of the country, the grain product of the country were protected by the same organization, the same kind of an organization with the same object in view, we today would be enjoying their product just as we are today enjoying butter.

I am not going to take any more of your time. Your secretary is here and has everything well in hand. As I stated before, it is my duty to raise the funds to carry on the work. He has a statement and will tell you how this is carried on and the position we are in at present time.

## REPORT OF THE SECRETARY.

C. Y. KNIGHT, CHICAGO, ILL.

*Mr. President, Ladies and Gentlemen*—President Shilling's statement that his part of the work of the National Dairy Union is a very small part, reminds me of the story of the Irishman who was a hod carrier. Somebody was asking him if it was not an awful hard life to be a hod carrier. He said, "no, begorrah; I carry the brick to the top of the building and the man up there does the work." My position now with Mr. Shilling is a good deal like that; he carries the bricks up and I do the work.

The most important of all the work that has ever been done by the National Dairy Union has been accomplished during the past year. There have been, since our last meeting, decisions in the United States Supreme Court in four cases, which were carried up by the oleomargarine manufacturers under the new law. Those cases involved technicalities through which they sought to find a loophole in the ten cent tax law, expecting they would be successful in winning at least one case, figuring that their chances in bringing the cases before the Supreme Court would give them at least one chance in four, and all they cared was for that one chance.

In every one of the four cases which they have brought before the Supreme Court they have been unsuccessful. The court has decided in favor of the Government, which means in favor of the dairymen, in every single case, and those decisions rendered by the Supreme Court have put the National Dairy Union on a stronger footing.

When we went to Congress asking for a tax of ten cents a pound on oleomargarine, colored in semblance of butter, there was a great deal of doubt in the minds of a good many well informed people as to whether such a law would stand the scrutiny of the Supreme Court of the United States. The law, of course, was denounced by its opponents as class legislation, as the classes against the masses, and as an attempt of one particular class of people to profit at the expense of another class; we were held up as sort of highway robbers; as people who wanted to force the consumers of this country to pay exorbitant prices for their food products, and it was said that such an unjust law could not be upheld by the Supreme Court of the United States.

Of course, nobody knows what the Suprme Court of the United States is going to do until it has done it. The matter was laid before the court in all its phases. The court decided that the ten cent tax was perfectly constitutional; that Congress had the right, in the first place, to tax any commodity any amount that it desired; that the question of what should be taxed and how much it should be taxed was entirely within the jurisdiction of Congress, and that the Supreme Court had nothing to do with it. That power was delegated to Congress by the Constitution and to say that Congress did not have that power would be declaring the Constitution unconstitutional. Then, in response to the claim of our opponents that Congress had arbitrarily misused the constitutional power given it by the Constitution, the Supreme Court answered that even though that be true that Congress had done something which might injure a certain class of people, the fact of it having kept within the bounds of the Constitution took the matter entirely out of the hands of the Supreme Court; and should the Supreme Court set aside a law which was passed by Congress, and set it aside on the ground that Congress has surpassed its rights in passing such a law, the Supreme Court would simply be abusing its power in order to correct an abuse of of another co-ordinate branch of the Government. That is, it would be a case of ''dog eat dog''; the Supreme Court would be as far wrong in setting aside the law as Congress was in making the law.

Another thing the Supreme Court called attention to was the fact that colored oleomargarine had been declared a fraud in a number of cases by the Supreme Court of the United States, and the cases cited; and, inasmuch as the court had declared this article a fraud and had decided that the various states had the right to suppress and absolutely prohibit it if they so desired; that such an article had no ground to stand upon coming before the court; that it really had no legal right to exist; that they had declared time and again that the suppression of colored oleomargarine was not violating any fundamental right of any person or persons throughout the United States.

The effect of this decision was to furnish an argument to our people in Congress. It gave us not only the support and the recognition of the highest legal minds in the United States, but it furnished us new arguments so that if the matter should come up before Congress again, the Supreme Court of the United States, through Justice White, can be quoted in direct support of the law, not only as a constitutional measure, but as a measure which is right.

There were three cases in which the constitutionality of the law was questioned, and the fourth case, in which the use of palm oil was under consideration. The fourth case was not decided until last June; the oleomargarine people argued that, inasmuch as the legal definition of oleomargarine embraced animal and vegetable oils and fats, that they had the right to use any kind of vegetable oil and fats and that palm oil, being a vegetable oil, was embraced in that definition. The internal revenue department decided that the palm oil used was entirely for the purpose of coloring, that it was not a proper article of diet, that it had never been used in food, and the quantity which they used plainly showed that it was used for no other purpose than coloring.

The oleomargarine people took exceptions to that and, while the lower court decided for the government, they took this matter up and laid it before the Supreme Court. The Supreme Court took the same view the commissioner of internal revenue did, and the decision of June, 1904, declared that the use of the palm oil added to oleomargarine constituted artificial coloration and subjected such oleomargarine to a tax of ten cents per pound. There was hanging on that decision a matter of almost a half million dollars taxes, which had been paid by the oleomargarine makers into the treasury of the internal revenue department in shape of fines. For instance, Wm. J. Moxley, in the city of Chicago, two years ago made in the month of February, 280,000 pounds of oleomargarine in which he put one-half of one per cent of palm oil. The Government came into that factory, ascertained from his books and records how much oleomargarine he had made, and put in a bill for $28,000 for the amount of taxes under the law, and Moxley was compelled to pay his $28,000 at once or suffer his factory to go into the hands of the Government. The Government would have gone in and thrown Mr. Moxley out and taken charge of the property, confiscated and sold it, taken $28,000 and costs out of the receipts and turned the rest over to Mr. Moxley, and his factory would have been gone. It was absolutely necessary for him to pay into the Government treasury $28,000.

The Cudahy Company, at Kansas City, were assessed $17,000 on 170,000 pounds; Kingman & Co., at Indianapolis, $14,000 on 140,000 pounds; the Oakdale Manufacturing Co., the Vermont Manufacturing Co. and the Globe Manufacturing Co., of Providence, were assessed $212,000 on 2,120,000 pounds, and various other establishments throughout the country which endeavored to violate the law through coloring their oleomargarine by the use of palm oil were assessed amounts which brought the entire sum which the Government collected from these people in fines up to almost a half million dollars. In the case of the Oakdale Manufacturing Co., the company was asseessed so much that its entire plant and property would not pay the bill; the Government took charge of the plant, the company went into the hands of a receiver, and the property was disposed of in order to meet the demands of the Government. There is no getting around Uncle Sam when he goes out collecting bills.

This has made oleomargarine makers a little timid about violating the law. They found they were up against a little different proposition than when they were fooling with the states, that the government absolutely knows no favor when it comes to collecting taxes; that it will collect taxes wherever they are due.

At our last meeting at Waterloo I showed you that in the year 1902, the last year under the old law, which permitted the coloring of oleomargarine in semblance of butter under a tax of two cents per pound, there was made in this country 126,315,427 pounds of oleomargarine, something over six thousand cars. The next year, the first year under the new law, a good deal of oleomargarine was made with this palm oil and other schemes, at which time the manufacturers had their organization and their agents out, they made 71,211,244 pounds, and that was a shrinkage of about forty per cent from the year 1902. During the year 1904, when the Government had got the matter of regulation down, had fined those people for putting palm oil in their oleomargarine, had got the work of collection of taxes systematized, and oleomargarine makers had found they could not violate or evade the law, when they had dismissed the extra help they held during 1903 in anticipation of violating the law, and in that way demoralized their organization, the output went down to 48,071,480 pounds, that is 48,000,000 for last year compared with 126,000,000 under the old law before the new law went into effect.

In 1900, that was two years before the new law went into effect, the make of oleomargarine was one hundred and seven million pounds, in 1901 t was one hundred and four million, and then, as I have shown you, under the last year of the old law it went up to one hundred and twenty-six million, then down to seventy-one million and then down to forty-eight million.

Now the matters of the National Dairy Union, their meetings and their work are entirely different from those of almost any other organization that the dairymen have been accustomed to be connected with. The National Dairy Union meetings are but the work of a day; there is practically no work to be done at the meetings; about all the work that we ever expect to do at these meetings is to come before you, explain what has been done during the year and make a report to you of the finances and the possible work that is to be done during the coming year.

The National Dairy Union supports an office in Chicago three hundred and sixty-five days in the year. It is an office well known now to the dairymen of the United States, where every man interested can direct communications and make inquiries, and send information. There is work done there every day; there are letters being written, a stenographer busy every minute of the day sending out letters, sending out circulars and answering communications; there is a bookkeeper who has over three thousand accounts to look after of contributors and agents of the National Dairy Union all over the United States who are contributing and have contributed, or who have our property in the shape of books to sell.

The President of the National Dairy Union has made it a point to attend every meeting that he possibly can of the dairymen in all of the states, in order that the interest in the organization and the interest in this protection of dairy interests may be laid before them, that they may understand it. For instance, he has just come from North Dakota, where he had been to lay the National Dairy Union work before the dairymen of that far north State. The State of North Dakota has just as much representation in the United States Senate as has the State of Iowa. The votes of the United States Senators in that State are just as necessary to us in Congress, or in the Senate, as the votes of the Iowa congressmen. The only way we can get and keep the votes of those senators through the different states is to have an interest in the State back of those senators, an interest that will tell its senators which way it wants them to vote. You can not fool a United States Senator; you can not fool a congressman; you can not make him vote for a bill unless he knows his people want it, and you can not make them want it unless they know and understand it themselves and tell him plainly that they know what they want and make him understand it in a way he knows they will not accept any excuse.

It has been the secret of the success of the National Dairy Union that it has done its work among the people. It has sent out millions of pieces of literature and educated the farmers as to what was done, what ought to be done and what was to be done. We have sent from the office as many as forty-five thousand letters, under two cent stamps, in one week to the leading dairymen all over the United States.

The National Dairy Union has been in existence now for ten years. It was organized in Chicago in 1894. I was elected secretary of the organization in 1897, and I have therefore held this office for eight years. Since I have been secretary of the organization, we had first the filled cheese law passed, a law which has absolutely killed the manufacture and sale of oleomargarine cheese, because filled cheese is just the same to the cheese trade as oleomargarine is to the butter trade. Filled cheese is made by the use of skimmed milk from which the butter fat has been extracted, and which has been ''filled,'' as they call it, with leaf lard. That threatened the whole cheese industry when the National Dairy Union took this matter up in 1896. The law was passed in 1896 or 1897, I have forgotten which, and went into effect in 1898, and now there is scarcely a filled cheese factory in the country where there were dozens before. It simply saved the cheese business from absolute demoralization.

The first work of consequence after that that the National Dairy Union attempted was the anti-color laws in the State of Illinois. For sixteen years the dairymen of the State of Illinols had attempted to have a law passed smilar to the laws of other states prohibiting the coloring of oleomargarine to resemble butter. They had never succeeded for the reason that all the committees in the legislature were packed against them by stock yards interests of the city Chicago. The National Dairy Union took it up and, while we did not get to work until the legislature had been in session over two months, we secured the passage of that law the first year.

At the next session of the legislature the National Dairy Union went before the legislature of Illinois and asked for the creation of a food commission and food commissioner. It is a strange thing to think that one of the leading dairy states of this country, a State only third or fourth in population, had no food or dairy commissioner until the dairymen asked to have the bill passed. We drew the law and at the request of the food people of the State and those interested in food laws, who had been endeavoring for years to get food legislation, included in our law as a rider the food legislation they have today.

Then the next work of the National Dairy Union came in 1898, when we started the fight for the ten cent tax on colored oleomargarine, which was carried on for four years before we finally won.

I have laid before the meeting, or at least a large proportion of those who came in early, a copy of Chicago Dairy Produce of last week, on page seven, of which is printed one of the campaign documents which are being circulated by the oleomargarine interest in order to create sentiment for the repeal of the National law taxing colored oleomargarine ten cents per pound. The oleomargarine people, after a number of years of work, have learned there is no such thing as securing legislation except through public sentiment being back of them. They can forestal, and have for years from such legislation through robbery and trickery of all kinds, but when it comes to restrict legislation or repeal the new law, they find it necessary to get public sentiment. We knew that a number of years ago, but they have just found it out. They have commenced a series of agitations in different parts of the country, in order to rouse the people up against this ten cent tax.

I will simply read you a few of the statements contained in a circular sent out from Jersey City, N. J., by one of the leading oleomargarine dealers in the State, Ammon & Person.

## FIFTY THOUSAND NEW YORK CHILDREN GO BREAKFASTLESS TO SCHOOL.

Fifty thousand children go to school breakfastless, which means idle fathers. So overwhelmed is the department of charities with tens of thousands of applications from men out of work that it finds itself unable to cope with the situation. In short, the metropolis this winter is facing a problem with regard to unemployed men such as never has been known in past years.—From a letter sent to Immigration Commissioner Sargent by a New York philanthropist, January 11, 1905.

### HIGH PRICE OF BUTTER FIXED BY THE MAKERS.

Creamery butter is now too high priced for poor people, and the laws of New York State forbid the sale of oleomargarine and butterine, thus depriving the public of a valuable food product, and compelling those who can afford to use butter to pay an exorbitant price for it.

This is thrown in to create the impression that the National oleomargarine law is responsible largely for the fact that those children have to go to school breakfastless, because butter is so high the children can not have any breakfast.

Indeed, as Mr. Shilling said a while ago, the butter industry is the only industry where supply and demand has anything to do with fixing the price. It is refreshing for me to read that the high price of butter is fixed by the makers, as stated by oleomargarine campaign document.

There was a misstatement in saying that the State of New York forbid the sale of oleomargarine, and they knew that the laws of the State of New York did not forbid the sale of oleomargarine if not colored in imitation of butter.

Then they go on and quote from Prof. Chas. F. Chandler, of Columbia college, of New York, as saying: "Not a single chemist of standing in the profession has uttered a word against artificial butter. All the great chemists of this country and Europe have pronounced in its favor. I regard it as a most valuable article of food and consider it entirely unexceptional in every respect." Well the other fellows have more money than we have to get utterances from those chemists, who are like lawyers and say what they are paid for, consequently there is not a great deal of evidence from chemists on our side, although we have some.

### EXTRACT FROM THE LAWS OF THE STATE OF NEW YORK.

Any person manufacturing, selling, offering or exposing for sale any commodity or substance in imitation or semblance of butter, the product of the dairy, shall be deemed guilty of a violation of the agricultural law, whether he sells such commodity or substance as butter, oleomargarine or under any other name or designation whatever, and irrespective of any representation he may make relative to such commodity or substance.

In the abstract that looks pretty severe. As a matter of fact, it only means that he is not allowed to sell or have for sale oleomargarine manufactured in semblance of butter, colored to look like butter, so people can not tell them apart, and he can not make the excuse and say he is selling is as oleomargarine, because we know that a man getting oleomargarine that looks like butter five times he may sell it as oleomargarine and five times at butter. If he were allowed to have it at all, we know that in five cases out of ten he would sell it for butter.

Then there is an extract from the United States internal revenue law. This extract is from section 8 of the new law, which says:

Upon oleomargarine which shall be colored to cause it to look like butter, of any shade of yellow there shall be assessed and collected a tax of ten cents per pound.

*Butter sells in Europe at eight cents per pound less than here.* I presume that it is a crime for the buttermaker to get a little more in the United States for his butter than in Europe, which has the advantage of all the cheap labor of the continent. We are to pay a high tariff tax on all kinds of imported goods, wearing apparel, and everything else, as the system of the Government is based on high tariff and in the eyes of the oleomargarine people should sell our goods in competition with the cheap labor of Europe; but our clothing and other commodities with forty or fifty per cent duty, giving the manufacturers of this country the advantage of this tariff, while we accept the low prices of Europe. It would be a very fair thing. Congress would not look at it in that way.

The legislature at Albany and the Governor of New York state should be petitioned to repeal the unjust law of the State of New York. Every congressman and United States Senator and the President of the United States should be asked to repeal the law taxing butter substitutes ten cents a pound.

Just before the assembling of Congress a report came from certain papers to the effect that a bill was being drawn by Crongressman Boutelle, of the city of Chicago, reducing the tax on oleomargarine colored in semblance of butter, from ten to four cents per pound. The papers became full of those statements. Washington, Philadelphia and Chicago, all of the daily papers, had more or less regarding it. Boutelle, whose name was connected with the matter, from the first, made no denial of the fact that he was going to introduce the bill. Mr. George W. Linn, vice-president of this organization, who lives in Boutelle's district in Chicago, wrote him a letter counseling him against introducing such a measure. Mr. Boutelle answed him that he contemplated no introduction of any such measure at this session of Congress. He qualified his statement that he intended to introduce no measure at this session of Congress, then he followed it up with six pages justifying his antagonism to the oleomargarine law, rehearsing all the old arguments brought up at the time this matter was under discussion.

Greatly to our surprise, because the National Dairy Union did not take it up or agitate it at that time, Congressman Boutelle came out in the daily press and stated that he has been simply submerged with petitions and letters of censure and admonishment from prominent organizations and individuals all over the country; that he has had so many letters admonishing him against introducing his proposed amendment to repeal this tax, that he has found it necessary to get out a circular denying the fact that he is going to do anything of the kind, and send it broadcast to the people. He has recently stated, in an interview from Washington, that he would think now just as much of removing one of the pyramids of Egypt to the capitol hill as he would think of repealing that law,—but that was only after he had heard from the country.

It only goes to show what a little agitation will do, and as I say the agitation he did get was not a circumstance to what he could get.

As I am both secretary and treasurer of the organization it is necessary for me to give you a financial report as well as a verbal report of what has been done during the year in the matter of legislation. However, before I close I want to say that, while there has been nothing done and can be nothing done at the present session of Congress, which will adjourn the 4th of March (they have their hands so full they could not do anything if they wanted to), Secretary of Agriculture Wilson told me that the oleomargarine manufacturers had told him that they were going to push the repeal or modification of that law. That is my authority. He told me when I was in Washington. I went down there four weeks ago to look after this matter and he told me they had come to him and notified him in an endeavor to get the Secretary of Agriculture to change his attitude on the oleomargarine question, in order that they might get a modification of the law, get the tax reduced from ten cents to four cents, using as an argument that the four cent tax on colored oleomargarine would have no effect at all in diminishing the output of the article, that they could pay the tax and it would mean millions of dollars to the Government of the United States, at a time when the Government is having a hard time raising revenue.

Veranda of the Woman's Building, Iowa State Fair Grounds.

## FINANCIAL STATEMENT OF NATIONAL DAIRY UNION,

*November 1, 1903 to January 1, 1905.*

### CREDITS.

| | | |
|---|---|---|
| Cash on hand November 1, 1903 | $ 473.78 | |
| Patrons' Handbooks sold and paid for | 2,530.52 | |
| Contributions to fund | 5,987.13 | |
| Directories sold and paid for | 905.00 | |
| Rebate expenses, S. B. Shilling | 96.46 | |
| Total | | $9,992.89 |

### DEBITS.

| | | |
|---|---|---|
| Paid C. Y. Knight, salary and expenses | $1,410.75 | |
| S. B. Shilling, salary and expenses | 2,546.17 | |
| James A. Harris | 68.41 | |
| Bookkeeper | 420.00 | |
| Stenographer | 900.00 | |
| Printing | 881.22 | |
| Office supplies and expense | 163.71 | |
| For typewriting letters and addressing | 89.54 | |
| Rent | 210.00 | |
| Telegrams | 26.10 | |
| Postage stamps and postals | 352.34 | |
| Express charges | 149.28 | |
| Exchange on checks | 43.30 | |
| Directories | 303.00 | |
| Miscellaneous | 221.15 | |
| Cash on hand January 1, 1905 | 2,207.92 | |
| Total | | $9,992.89 |

We are, for the first time in the history of the organization in shape to meet the ememy at any time. We can, at the drop of the hat, take up the fight and have plenty of funds to carry the work forward. Of course that does not mean that we do not need funds, because we are working all the time and have to be on hand all the time to agitate the matter.

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THE PRESIDENT: Gentlemen, you have heard the report of the secretary-treasurer, and I want to explain why these accounts have not been audited by a committee. The bookkeeper in our office met with an accident recently and has been confined to his room for six weeks. It was therefore impossible to get the accounts in shape to turn over to an auditing committee. It is our intention with the election of the new board of directors, which we expect to elect here today, to have them come to

Chicago and audit these accounts. We will then issue a report to all our supporters giving the result of their work.

THE SECRETARY: In explanation, I would say that the officers of the National Dairy Union, while no formal arrangements have ever been made for auditing the books, on their own volition called upon the Elgin Board of Trade, the members of which own a large number of creameries in Southern Wisconsin and Northern Illinois, to appoint a committee from their organization to come in last November and audit the books of this organization No matter how much confidence you have in the officers of your organization, or anything of that kind, it is necessary for us to run this organization in a way that will keep the confidence of those interested. We must have everyone interested know how the business is run, and we must have our report substantiated by the report of disinterested people with a full explanation of what has been done in order that there may be absolute confidence in the organization. The way to do that, as they say about honesty, the way to keep a man honest is to give him no opportunity to be otherwise, not that we think the officers of this association would be otherwise, but we don't want to give anyone an opportunity to question it, because the minute there is a question as to funds of this organization, it would put such a damper on the organization that it would kill the whole thing.

One of the secrets of our success for the past ten years is the fact that we have taken people into our confidence all the time, and made it clear just what was being done with the funds, and giving them every opportunity in the world to investigate receipts and expenditures.

THE PRESIDENT: I want to say a word of explanation and it will not take a minute. When I was sitting there I saw Brother Moore shake his fist at me, and I knew it was about our creamery directory. I went to work to get out a directory and knew very little about doing it and supposed the directory was all right; but I want to say that we had nine hundred orders for that directory before it was out of the printers' hands, and the beauty of it is that while the commission men knew they were not worth much everyone took his medicine, and we expect them to do the same next year.

W. S. MOORE: I accept your explanation, Mr. President, but that is not what I arose for. I move that the secretary's report be referred to the executive committee for auditing.

Motion duly seconded and carried.

THE PRESIDENT: The next thing in order is the election of officers for the ensuing year, and the first office to be filled is that of president. Who will you have for your president?

W. S. MOORE: It is too late to make an extended nominating speech, but I think I can put just as clearly what I want to say by one remark, that in looking over the entire organization of the National Dairy Union there appears to me but one man to be its president, and that is the man in whom we all have absolute confidence. Therefore, I rise to nominate Mr. S. B. Shilling, as president of the National Dairy Union.

The nomination being duly seconded and carried, Mr. Shilling was declared unanimously elected president of the National Dairy Union for the ensuing year.

MR. SHILLING: Gentlemen, I thank you. I am not going to make a speech, but I will say to you, as I said to the dairymen, the other night, that for the year to come you are going to have the best that is in me. That is all I can do. I thank you for the honor you have conferred upon me by electing me president for the coming year.

THE PRESIDENT: The next office is that of vice-president. Who will you have for your vice-president.

MR. WRIGHT: Mr. George Linn, of Chicago, is nominated for vice-president.

MR. GALLAGHER: Being a friend of Mr. Linn, and knowing that at the present time he is indisposed or otherwise he would be present, I take pleasure in seconding the nomination for vice-president.

Nomination duly carried and Mr. Linn was declared elected vice-president of the organization for the coming year.

THE PRESIDENT: The next is the office of secretary-treasurer. Nominations are in order for that office.

MR. WRIGHT: I nominate Mr. C. Y. Knight for the office.

Nomination being duly seconded and unanimously carried, Mr. Knight was declared elected secretary-treasurer of the National Dairy Union for the coming year.

Mr. A. W. Trow, of Minnesota, Mr. E. I. Burridge, of Ohio and Mr. H. J. Neitert, of Iowa, were elected executive committee for the year.

THE PRESIDENT: The executive committee may set its own time for auditing the books of the association, it may be soon or possibly thirty or sixty days, but we will have this auditing done as soon as possible and every one in the country will be notified of their findings when they have examined the accounts.

We will have our last meeting this afternoon. We will have the president of our Memorial University in place of Governor Cummins, who is ill and can not be here. We will also have Professor Frazer, of Illinois. This will give us one of the best programmes we have had during the convention, and we want an audience, if possible.

The meeting will now stand adjourned until 1:30 o'clock P. M.

## PASTEURIZATION OF HAND SEPARATOR CREAM.

### PROF. C. LARSON, AMES, IOWA.

*Mr. President, Members of the Iowa State Dairymen's Convention, Ladies and Gentlemen*—This subject of pasteurizing hand separator cream is a new one, but nevertheless important. It is seemingly uppermost in the minds of progressive creamery operators. Comparatively little experimental work has been conducted along this line. Knowing that several of the large central creamery plants in this State, as well as in other western states, were conducting experiments along this line with a view of obtaining economical results, I wrote to them for information. The managers of these different creamery companies kindly furnished me with a great deal of valuable information, for which I am grateful. This information, my own experience, together with results obtained in experimental work at our Iowa Experiment Station at Ames, at the Michigan, Wisconsin and other stations, form the basis of what I have to say of this subject.

A few years ago the term hand separator cream was hardly known in the State of Iowa. At the present time it is almost a household word. According to the State Dairy Commissioner's Report, in 1898 there was not quite one thousand hand separators in this State. At the present time the number of hand separators has reached nearly twenty thousand. This proves that there is a great deal of hand separator cream to be handled in this State.

It is well known, and an accepted fact, that at the present time the hand separator cream is inferior in quality. All dairymen and creamery operators agree that efforts should be exerted toward improving the present quality of hand separator cream. There are two ways in which hand separator cream may be improved:

First, improving the cream on the farm by means of preventing contamination and keeping it at a low temperature.

Secondly, by treating the cream at the creamery according to special methods, thus applying a cure, while the methods mentioned in the first case would be applying preventives.

A great many people object to exposing the cream to any special treatment at the creamery, on the ground that if the same effort, time, and money, necessary to improve the cream there, were exerted toward improving the quality of the cream on the farm and during transportation, much better results would be obtained. The results obtained for improving the quality of cream on the farm are not immediate. It seems to take considerable time to cause a marked improvement to come about it in this way, while improvements caused by any special treatments at the creamery would be noticeable at once.

Several methods of improving hand separator cream at the creamery have been experimented upon at the Dairy School, Ames, Iowa, at Michigan, and at several of the larger central plants. One method employed at the Iowa Experiment Station was to neutralize the acid in the cream with ordinary bread-soda, and also with powdered chalk. After neutralization, the cream was pasteurized, a starter added, and the cream ripened in the usual way. By this method we were able to improve the immediate quality of the butter several points, but for some reason this butter did not keep. After the butter had stood in cold storage a day or two it assumed very undesirable flavors, undoubtedly due to chemical changes rather than bacteriological. For this reason it was not deemed expedient to employ or recommend this method.

A second method used was to wash the hand separator cream in water and also in good, sweet skimmed milk. In some instances a little amount of saltpetre was added to the water. Sufficient water or skimmed milk, whichever was used, was added to the cream to dilute it to such an extent as to permit of reskimming. The cream was stirred thoroughly after it had been diluted. Then it was reskimmed and the cream pasteurized. A very rich cream was skimmed which removed a large portion of the undesirable serum. A starter was added to the cream and ripened in the usual way. The resulting butter showed a marked improvement.

This method of improving hand separator cream could hardly be classed as a practical method because in the first place it requires a considerable amount of work and time, and there is also a considerable loss of fat sustained during the skimming process. Diluting the cream with sweet skimmed milk, stirring it thoroughly and then reskimming it produced the best results. Ordinarily, in practice, it is impossible to obtain sufficient sweet skimmed milk to enable the creamery operator to make use of this method of improving hand separator cream.

A third method employed is that of pasteurization. When the cream was being pasteurized without the addition of a good starter afterwards, very little improvement in the *immediate* quality of the butter was observed. Considerable improvement in the *keeping* quality of the butter was noticeable. When the cream was pasteurized and afterwards a good starter added, a marked improvement in the resulting butter was noticed. The immediate quality, as well as the keeping quality was improved several points. These same results in regard to improvements obtained by pasteurizing hand separator cream have been confirmed by other experiment stations, and by different individual creamery companies in this as well as in other states.

Some have reported poor results by means of pasteurizing hand separator cream. In some instances when sour hand separator cream is pasteurized it becomes slimy and lumpy. This was a difficulty commonly encountered when sour hand separator cream was first being pasteurized. This is due to the fact that this quality of cream was pasteurized in the same way as was formerly practiced in the pasteurization of sweet cream and milk. In order to obtain good results by pasteurizing hand separator cream it is essential that special precaution should be taken.

The first point to be considered in order to avoid sliminess and lumpiness in connection with pasteurization of hand separator cream, is to expose a comparatively small amount of cream to the heat at one time. The cold cream running in should not be allowed to mix with a comparatively large amount of the heated cream already in the pasteurizer. If the cold cream is allowed to mix with that already heated to a large extent in the bottom of the pasteurizer, the whole will be heated very gradually. Such a condition is likely to cause the sliminess referred to above. The heat should be applied to as thin a layer of cream as is consistent with the use of the particular pasteurizer. It seems that when sour cream is heated quickly to pasteurization temperature, the curd breaks up into small or fine particles, while if heated gradually, in many instances, the curd seems to coagulate into a smooth and slimy condition.

It has also been demonstrated that the slimy and lumpy condition is most likely to form when the cream has an acidity of about three per cent to four per cent. At about this degree of acidity the cream will coagulate when heated, and is likely to coagulate in an abnormal way. If the acidity is much lower than this the cream does not coagulate on heating. If the acidity is higher than four per cent, the coagulation has already taken place in a normal way, and if such cream is rapidly heated, the coagulation will be broken up into smaller particles without any abnormal effect upon the cream.

The richness of cream is also a very important point in order to prevent sliminess. The greater the per centage of fat, the less serum there is. As it is the serum portion that causes the difficulty, the less serum or substances not fat in cream, the better it is for pasteurization. Rich cream becomes more liquid on heating, due to the melting of the fat. Cream containing a small amount of fat is likely to become thicker by pasteurizing it, due to the coagulation of the relatively large amount of serum as described previously.

In order to be able to heat the hand separator cream to a comparatively high temperature, it should not be allowed to move sluggishly over the heating surface. By this I do not mean that the time it takes for the cream to pass from the inlet to the outlet of the pasteurizer should be of very short duration, but I mean that the cream should not be exposed very long at one place to the heating surface. If cream moves rapidly on a smooth heating surface, burning is in a large measure prevented. By increasing the speed of the agitator a trifle the cream in most types of pasteurizing machines would be caused to move more rapidly over the heating surface. An increase of speed would also, in a measure, prevent the cream from gathering at the bottom of the pasteurizer.

The temperature at which to heat in order to obtain good results in the pasteurization of hand separator cream may vary. A temperature of about 180 degrees F. has proven to give good results. At this high temperature germs causing contagious diseases, as well as the lactic acid producing germs, or those in vegetative stage, are destroyed. Some claim that if the cream is real sour better results are obtained if heated only from about 150 degrees F. to 160 degrees F. It is claimed by those who favor this temperature that when sour cream is pasteurized to so high a temperature as mentioned above (180 degrees) an undesirable flavor is produced in the resulting butter. This, however, has been verified in a practical way only in a few instances. It is my experience and personal opinion that if the pasteurization is properly performed, the most all-around suitable temperature at which to pasteurize is about 180 degrees F.

In connection with this it should be stated that the cream should be cooled to a low temperature as quickly as possible after heating. Especially is this essential when the cream has been heated to a comparatively high temperature. The sudden chilling of the cream causes the butter to assume a better texture, and the chances for getting cooked flavors in the butter have been reduced to the greatest possible extent.

The advantages of pasteurizing hand separator cream may be said to be similar to those obtained in the pasteurization of ordinary sweet cream or milk, only the improvements obtained are more marked in the pasteurization of hand separator cream. The poorer the cream is in quality (not richness), the better results are obtained by pasteurization. It is not my intention to discuss in detail the advantages of pasteurization. It suffices to mention that pasteurization, especially if a good starter is added afterwards, improves the *immediate* quality and the *keeping* quality of the butter. It expels foul gasses from the cream, insures a more uniform product, and it improves the sanitary condition of the resulting cream and butter.

This latter factor has, to a large extent, been overlooked in the past. It perhaps has little significance in a financial way, but from a sanitary point of view it constitutes no small consideration. It is a well known fact that milk and cream are commonly carriers of contagious diseases, such as teberculosis, diphtheria, typhoid fever and scarlet fever. If milk and cream transmit these diseases, then there is a possibility that these diseases may be carried in butter also. If there is a possibility of transmitting disease through butter, then all possible chances should be removed by pasteurizing the cream to a sufficiently high temperature (180 to 185 degrees F.).

According to reports, 150,000 people die, annually, from consumption in the United States. It has been stated by the same board of health that one person out of every ten in the United States is destined to die of tuberculosis. The Iowa board of control reports that about seven thousand people died from this disease in Iowa during the last year. In some foreign countries, for instance Denmark, the Government has enacted laws which compel every creamery operator to pasteurize all of the skimmed milk before it is returned to the farmer, and also all of the cream before it is manufactured into butter. This law was enacted in order to combat the disease tuberculosis.

The present method of handling hand separator cream, permits of this process of pasteurization to be carried on at two places, namely, at the central churning plant and at the receiving station. Whether the pasteurization should be carried on at the churning plant or at the receiving station depends evidently upon existing conditions. According to the experiments carried on at Colbey, Kansas, by Ed H. Webster, Government expert, in connection with the Continental Creamery Company, pasteurization can best be accomplished at the central churning plant. The results obtained from those experiments show that if the cream is pasteurized at the receiving station it develops considerable acidity before it reaches the churning station. The temperature in the transportation cars is usually high enough so as to enable the ferments in the cream to develop. The ferments which develop in cream after pasteurization when no starter has been added are usually of an undesirable kind. The cream which was on the road about twenty-four hours developed on an average five degrees of acidity before it reached the churning plant. Cream which was on the road for forty-eight hours developed on an average about twenty degrees of acidity (Mann's test). In order to get good results from such cream it would be essential to repasteurize it.

The Continental Creamery Company, which is now operating over 400 different receiving stations pasteurizes the cream from about 350 of them at the central churning plant, while the remaining cream is pasteurized at the receiving stations. It is reported that a comparatively large amount of this cream has to be repasteurized again when it arrives at the central plant.

In no instance did the replies received from managers of central plants state that pasteurization of hand separator cream could not profitably be employed. A few of them reported that at times they were able to get really good results, and again at other times they were unable to get the expected improvements. Others again were very enthusiastic over the results obtained by pasteurizing cream. It is worth noting that in every instance where marked improvements were obtained a good starter amounting to about ten per cent to twenty per cent of the cream was added to the cream immediately after pasteurization. The Continental Creamery Company of Topeka, Kansas, and the Capital Creamery Company of Des Moines, Iowa, were two of the companies which reported that they were pasteurizing all of the cream and were obtaining satisfactory improvements. Whether or not it will pay to pasteurize hand separator cream eventually will depend upon conditions such as the amount of cream, quality of cream, facilities for pasteurizing, etc. Certain it is, that if a good starter is added to the cream immediately after pasteurization, improved results can be obtained in the immediate quality as well as in the keeping quality of the butter. Whether or not these improved results are of sufficient importance to repay the creamery operator for the trouble, time and expense necessary to carry on proper pasteurization is something that must be decided by the individual operator.

## FRIDAY AFTERNOON SESSION.

Meeting called to order at 1:30 P. M. by Vice-Presiden. Barney.

THE CHAIRMAN: I believe Mr. Shilling explained to you this morning that it will be impossible for Governor Cummins to be with us today. On account of his illness, I understand, he is obliged to cancel all his engagements. However, we have a gentleman with us who is well known to the dairymen of the entire West. He has perhaps done as much for the dairymen of Illinois as any man that has taken an interest in the affairs of that State. I have the pleasure of introducing to you this afternoon Prof. W. J. Fraser, of Urbana, Illinois.

## BREEDING UP THE DAIRY HERD.

### PROF. W. J. FRASER, URBANA, ILLINOIS.

*Mr. Chairman, Ladies and Gentlemen*—It gives me great pleasure to come over here to Iowa to see you people and tell you a little about what we are doing over in Illinois with cows, and of course whatever we are doing there with cows applies here.

This is a time of great agricultural advancement and improvement. The past few years have witnessed intense activity in all phases of scientific and practical agriculture, and especially in animal husbandry. What the effect of this great development is to be is a question still unanswered. This much, however, seems clear; as farming in all its different branches becomes more specialized and the conditions confronting farmers more complicated, a greater amount of skill is required and the more ignorant will be forced into the simpler occupations. A time of such intense agricultural development must necessarily be a critical one, especially for the more difficult and intricate branches which require the most skill, such as the successful breeding of dairy cattle.

During the past thirty or forty years many valuable dairy animals have been imported to this country. At least four distinct dairy breeds have been bred and developed until it is generally conceded that we have as good dairy animals in this country as any place in the world. The question I wish to bring to your attention is, what is the condition of the dairy cattle interests in this country as a whole? Have these high class dairy animals had the influence upon the average dairy herds of the country that they should have had?

In traveling over Holland I was much impressed with the general good quality of the cows in the average producing herd. The average cows in that country are very far ahead of the average cows here. There is little demand from the majority of our dairymen for blood of a strictly dairy breed and too frequently pure-bred bull calves of good quality and breeding are a drug on the market.

Let us look for a moment at the dairy conditions as they exist in some sections. Last summer I was visiting some of the creameries in the southern portion of Illinois in company with one of the assistants in our department. The afternoon of the third day, as we were driving along a country road, our attention was attracted by two Holstein-Friesian calves in the pasture. My companion stopped the horse suddenly and took off his hat out of respect for their courage in braving it alone in a strange land. I mention this little incident simple to impress upon you the fact that we had been traveling for three days in what was supposed to be a creamery region and yet these two calves were the first evidence we had seen of any strictly dairy blood. It is needless to add that the creameries in that region were receiving but little milk or cream.

Evidently the average dairyman is not giving much attention to the kind of cows he is breeding, if, indeed, he is breeding at all. In many dairy sections dairymen simply purchase their cows, milk them as long as they are considered profitable, and then dispose of them to the butcher. If the cows are bred at all, the calves, even from the best cows, are disposed of for almost nothing when only a few days old, as they think it reqnires too much milk to raise a calf.

Stick to one occupation; try to decide what that occupation is you wish to follow, then stick to it. Farmers do not stick to one thing. I tell the students and tell the farmers, especially young farmers, that they should decide what branch of agriculture they wish to engage in and then stick to it. If, for example, a man is going to be a dairyman, it takes certain amount of skill along certain lines to be a high class dairyman. He has to have certain equipment of building and other things to be a first-class dairyman, and after he has this equipment then he does not want to throw this knowledge aside and go into beef production, swine production or sheep production, or horses or anything of that kind.

We have come to the point where we should be able to see that there is plenty of money in any of these lines of breeding, if we get to the top. There is plenty of money to be made in any of these lines, but we are making a mistake in changing; the American farmer is too fickle in changing from one thing to another. As a rule, he is giving to raising beef cattle when it is high, and selling out when low; going into dairy cattle because dairy products are high.

Common observation teaches us that cows differ greatly in the amount of milk and butter fat they produce in the same period of time, but it does not inform us whether the food consumption differs in proportion to the yield, or whether one cow may actually manufacture more than another out of the same amount of feed. The question then arises, will two cows fed on like feeds make the same returns, and, if not, will the yield be in the ratio of the feed consumed. In other words, is there much difference in the actual profit derived from different individual cows in the same herd? To determine the difference with accuracy requires careful daily records of all feed consumed and product yielded by the cows. While it is not practical to keep such accurate records on dairy farms, let us look for a moment at the results obtained from the careful investigation along this line made by the Illinois Experiment Station in the past six years.

### DIFFERENCE IN EFFICIENCY OF COWS.

| ROSE. | | | QUEEN. | | |
|---|---|---|---|---|---|
| Lactation Period Mo. | Pounds Milk. | Pounds Fat. | Lactation Period Mo. | Pounds Milk. | Pounds Fat. |
| 21 | 14,462 | 704 | 10½ | 3,471 | 126 |
| 1 dry period. | | | 1 dry period. | | |
| 19 | 14,536 | 762 | 9½. | 4,078 | 156 |
| 2½ dry period. | | | 1 dry period. | | |
| 11 | 10,247 | 507 | 13 | 3,838 | 134 |
| 3 dry period. | | | 3 dry period. | | |
| 15 | 12,680 | 637 | 11 | 5,374 | 194 |
| 1½ dry period. | | | 1 dry period. | | |
| 13 | 6,018 | 291 | | | |
| 3½ dry period. | | | | | |
| 16½ | 10,412 | 511 | | | |
| 1 pry period. | | | | | |
| 13½ | 9,437 | 470 | | | |
| Total | 77,792 | 3,882 | Total | 16,761 | 610 |
| Average 10 years | 7,779 | 388 | Average 4 years | 4,190 | 152 |
| | No. 1. | | | No. 3. | |
| 10 | 11,384 | 426 | 11 | 5,308 | 201 |
| 3 dry period. | | | 4 dry period. | | |
| 12 | 12,415 | 439 | 9 | 4,541 | 168 |

### RATIO ON LIKE FEED BASIS.

| Rose | No. 1. | Queen | No. 3. |
|---|---|---|---|
| 304 | 312. | 100 | 121. |

From these yearly records it has been found that reduced to exactly the same feed basis when the poorest cow produced 100 pounds of butter fat the best cow produced 312 pounds and the next best 304 pounds, with no body gain.

### CHART AND SCALES.

Many dairymen are keeping one-half of their herds at an actual loss. They are perhaps making a little profit on the whole herd and are thus apparently satisfied, whereas, if they would dispose of their unprofitable cows they would make more money and also save labor. If in a town having two grain elevators, one paid one-half cent a bushel more for grain than the other, no farmer would be foolish enough to sell his grain at the one paying the lower price. Yet dairymen will persist in keeping cows year after year that are paying them only twenty-five cents a bushel for grain, while others in the same herd, or that can easily be obtained at a reasonable price, will pay fifty cents a bushel or even more for the grain they consume. The difference in price which individual cows are paying for their grain is not so apparent as the difference at the elevators, but it is none the less actual and affects the pocket-book just as surely in the end.

Every dairyman should have a profitable standard of production for his cows, and any mature cow that does not come up to this standard should be disposed of at once. What this profitable standard is, each must determine for himself, as it will depend upon the cost of feed and the care and the value of the product in that particular locality. This standard should be gradually raised each year by weeding out the poorest cows and breeding only from the best. The only way this can be done intelligently is by keeping a record of each individual cow. Generally speaking, cows can not be kept at a profit in the central west that do not produce the equivalent of 250 pounds of butter annually.

## KEEPING RECORDS OF INDIVIDUAL COWS.

To determine exactly what a cow produces in a year, every milking must be weighed and sampled, but if the herd is given a one-week test every three months it will give approximately correct results which will be of the greatest value. All the apparatus necessary for this purpose is a spring balance, as many common glass fruit jars as there are cows in the herd, and a four-bottle Babcock milk tester. The latter can be purchased from any creamery supply house for five dollars. A set of directions accompanies the tester and by following these any intelligent person can operate the test. The milk may be weighed on any scale but a spring balance is most convenient. The scale should be so adjusted that it will balance the empty milk pail with the hand at zero. The weight of the milk may then be read directly from the scale without subtracting the weight of the pail and may be quickly recorded opposite the cow's name on the milk sheet provided for the purpose and placed on the wall convenient to the scale. A sample should then be taken by means of a small dipper holding about two tablespoonfulls and placed in the jar bearing the cow's name or number. A cartridge shell of the proper size, with a wire attached for a handle, makes a very convenient dipper for this purpose. If things are conveniently arranged this can all be accomplished very quickly. To prevent the milk from souring until the end of the week, to each glass jar should be added as much pulverized potassium bi-chromate as will lie on a one cent piece. Potassium bi-chromate may be obtained at any drug store, and, although a rank poison, is one of the best preservatives to use for this purpose for the reason that it imparts a lemon color to the milk, thus making it easy of detection and obviating the possible mistake of feeding it to calves or pigs.

At the end of the week the composite samples in the jars are tested with the Babcock milk test to determine the per cent of butter fat. This gives the average amount of butter fat contained in each cow's milk for the week. The total weight of the milk for the week, multiplied by the per cent of butter fat, gives the total butter fat produced by that cow for the week.

This test should be made every three months, or thirteen weeks, and in computing the yield of the cow for the three months the six weeks previous to and the six weeks following the test should be taken, for obvious reasons, and not the three months before and the three months after. Even if the cow is shrinking in flow the week in the middle of the three months will fairly represent her average yield for that period.

After a fair trial all mature cows that do not come up to a profitable standard should be disposed of at once. A heifer may not do well with her first calf, but if she is a promising individual in other respects she should still be retained. If, however, she is a poor producer during her second lactation period, she should be kept no longer.

Horses, beef cattle, and sheep may be produced in large numbers on the ranch, but dairy cows can not be obtained in this way; they must be bred somewhere by dairymen. Many of our dairy farms where large numbers of cows are kept afford excellent opportunity for good work in breeding. We recently purchased a grade Holstein-Friesian cow from a large dairy herd where a scrub bull was kept. This cow produced 300 pounds of butter fat in the first six months, yet her calves had been sold, like all the rest from this herd, at $2.50 each as soon as the milk of the dam was good. Any dairyman can raise a better cow than he can buy for the same money, and usually the only thing lacking is a pure-bred bull to head the herd.

Improving pure-bred stock by breeding is an exceedingly intricate and difficult problem, but grading is comparatively simple, as with common cows a pure bred sire is sure to be prepotent, and good results are, therefore, certain to follow. The old saying, "The sire is half the herd," does not always express the whole truth. In a sire whose ancestors have been bred for dairy purposes only, these characteristics have become firmly fixed and when crossed on cows of no special breeding will produce calves more like the sire than the dam. In this case the sire counts for more than half. A dairyman may start with nothing but the most ordinary cows and by simply breeding to dairy sires of excellent quality and pure breeding he will in a few years have a fine working herd. Do not misunderstand me; I am advocating grading, but not crossing, breeds. Great harm has been done and is still being done to the dairy cattle of this country by crossing.

Our American farmers, as a class, are too fickle. It seems to be difficult for them to decide on a policy and settle down to that as a permanent thing. Frequently a dairyman will make a start by purchasing a Holstein-Friesian sire and about the time he gets some half-blood calves a brilliant idea strikes him and he thinks he will show the dairy world something about producing dairy cattle that will give a large flow of milk and also test high in butter fat, and he purchases a Jersey sire. After another two or three years beef is at a good price and he decides to try a little beef blood, so that he can get more for his old wornout cows. The result is, his herd, after all these years of breeding, is no better, if indeed, as good as when he started. I do believe that there is untold benefit to be derived from grading, and that this is the way to improve the average dairy stock of the country. No matter how poor a herd a dairyman may have, the first crop of calves from a pure-bred sire will be half-bloods or better, and the next generation three-fourths or better. I can not imagine how a dairyman can improve his herd more surely or more economically than by this method.

Too much stress can not be laid upon this point, and money and time spent in finding an excellent sire will prove a remunerative investment even to the average dairyman if he will *stick to one breed.* One of the chief missions of breeders of pure-bred dairy cattle should be to supply our dairy farmers with sires for grading, and thus greatly improve their herds at but comparatively slight expense.

What is the cost of furnishing every calf that is born with one good parent? Suppose a man has a herd of forty common cows and pays one hundred dollars more for a pure bred bull than he would for a scrub. It will cost no more to keep the one than the other and he can retain him for at least two and a half years, which will make it cost just one dollar per herd extra to have each calf in the herd, at least a half-blood or better. If we consider the male calves of no more value it would raise the price of having the heifers half-bloods to two dollars apiece. Surely this is a nominal sum and I do not know where money could be better invested if it cost many times this amount.

## VALUE OF TRIED SIRES.

In breeding dairy cattle we should abide by the same practice as in breeding horses, and use young untried sires only to a very limited extent. Many breeders of dairy cattle seem to have overlooked this fact entirely, and frequently much damage is done by using a young untried bull to head a valuable herd when he does not prove to be the kind of a sire he should. As soon as another bull is needed to prevent inbreeding, the old one is sold to the butcher and a bull calf is purchased in his place. This is certainly a great mistake, for frequently a valuable sire is destroyed before his real worth is known. How often do we hear men remark that they would pay a big price if they could only get one of their old herd bulls back again, and that they never realized his value until his offspring came to maturity, which was after he was killed. Exceptionally good sires are very rare, and when they are found they should by all means be allowed to live and beget their kind as long as possible, not simply for the remuneration to the owner but for the good of the dairy interests in general.

Two years ago I visited a large number of herds in search of an old tried Holstein-Friesian bull that had proved his worth, to head our University herd and I was surprised to find that so many of our best breeders were using young untried sires. The few old herd bulls that I did find which had headed some of our best herds and were for sale did not seem to be much sought after by other breeders and were usually not held at a high figure. There is something wrong when a good old bull of merit that has proved himself to be an excellent sire is sold to the butcher while he is strong and vigorous. It is true that some of our best breeders have awakened to the importance of this fact, yet many of the smaller ones are still disregarding it and few indeed seem to see its full significance. I have known of pure-bred herds where as high as three hundred dollars and four hundred dollars were paid for individual cows yet the owners did not expect to pay more than two hundred dollars for a sire to head this same herd. If a breeder can afford to pay such high prices for females he should certainly spare no pains or money to get the best sire obtainable.

Do not understand from what has been said that I do not appreciate the value of a bull's pedigree—far from it. In no class of animals is the pedigree of such great importance as in the diary sire. The reason for this is that in all other classes of animals by inspecting the sire something can be told of his individual merit for the purpose for which he is kept. The speed stallion can be tested on the track, the wool ram by examining and weighing his fleeced, and all flesh producing animals by the development of the high priced portions of their bodies, while the ability of the untried dairy bull to produce good milkers must be determined almost entirely by the record of his ancestors. To show the importance of keeping records of cows I wish to call your attention to the fact that in no class of animals do we have the opportunity to determine the individual merit of the females from the standard of production as in dairy cattle. An exact record of the yield for the entire year may be easily kept and the animal's worth be determined while comparatively young, and without destroying the animal, as is necessary in the block test.

### IMPORTANCE OF LONGEVITY.

Is the average life of our cows of sufficient length? Few breeders seem to pay any attention to this important point. In advertising a bull for sale how frequently is great stress placed upon the record made by his dam in some one week of her life; this is given to the fraction of an ounce and a similar record is frequently given of his other female ancestors for several generations. All this is valuable and I would not detract from it, but is it not of equal if not of still greater importance in selecting a bull to head a valuable herd that something be known of the longevity of his ancestors? Yet who ever saw anything of this kind mentioned in sale ''ads'', or in giving the breeding of bulls that head some of our great herds. Why breeders of the different breeds of stock have lost sight of this important point I am at loss to know, but the fact remains that they have done so. This shortness of life in the breeding stock is a very serious drawback indeed with some dairy herds, and the breeders themselves do not seem to realize it.

To illustrate let me compare for a moment the offspring from two cows, A and B. Suppose cow A drops two calves and then either dies or fails to breed and each of her female decendants do the same. On the average one of these calves will be a male and the other a female. For the purpose of illustrating this we will take the females only. No matter how long this family may be bred it will be represented by but one female of breeding age, and the family will simply maintain itself in the one female.

For comparison with this, suppose that cow B and each of her female decendants had twelve calves in their lifetime. As with cow A, on the average half of these would be females. In the second generation there would be six females, in the third generation each of these six would produce six other females making thirty-six, and so on until the end of the tenth generation they would aggregate 60,000,000 or more than three times the number of dairy cows in the whole United States, all the decendants of the one cow B, ten generations before. This may be shown more plainly in tabular form, as follows.

Comparative value of two cows in producing dairy stock, considering half the offsprings are females and counting females only. Cow A and her female offspring each have two calves in their lifetime while cow B and her female offspring each have twelve calves.

| Generations. | Female Offspring From Cow A. | Female Offspring From Cow B. |
|---|---|---|
| 1 | 1 | 6 |
| 2 | 1 | 36 |
| 3 | 1 | 216 |
| 4 | 1 | 1,296 |
| 5 | 1 | 7,776 |
| 6 | 1 | 46,656 |
| 7 | 1 | 279,936 |
| 8 | 1 | 1,679,616 |
| 9 | 1 | 10,077,696 |
| 10 | 1 | 60,466,176 |

Total number of dairy cows in the United States, 1900, 18,000,000.

Of course, cow A is an extreme case, but a breeder could never increase his females by breeding from cows of this kind and would have no chance of selection, but with one cow like B he could establish a whole herd, besides having the all important opportunity to select only the best. Whether good or poor, the expense of raising different individual cows up to the milk-producing age is practically the same. If the cow A has but two calves and then either dies or fails to breed, she has but two years in which to repay the cost of her raising and make a profit. The chances are that with cows of weak constitutions there will be an added expense in keeping many of them after they have ceased to give profitable returns. If the cow B lives to produce twelve calves there are twelve lactation periods in which to pay for her raising and make a profit.

In conclusion, then, allow me to sum up briefly the five special points of this paper:

1. Keep a record of each individual cow in the herd by testing one week every three months.

2. Have a profitable standard of production below which no cow is kept, and gradually raise this standard from year to year.

3. Determine which breed is best suited to your conditions and then stick to this breed.

4. When in search of a sire to head your herd do not risk the future of your herd with some untried calf, but get some old, tried sire that not only has good ancestors with large yearly records, but one that is a good individual and has proven his worth by producing daughters that have made large returns.

5. When you have a grand old cow that is well along in her teens, and still a good producer, prize her offspring highly, for they are valuable.

## DISCUSSION.

MR. ANDERSON: How long a period would you require to test a cow before you either accept her record or reject her as worthless.

PROFESSOR FRASER: A heifer with her first calf or one of mature age? It would make some difference with a heifer with her first calf. If she did not do well the second lactation period, unless she was a promising looking heifer, I would not keep her any longer; but if she was a very promising looking heifer I might try her one year more; if fully matured, I would not test her over two years at the most, and if she did very poorly the first year without apparent cause, if in good condition, well taken care of and had a good chance, indeed it would go pretty badly against her the first year. Of course cows do have their off years once in a while, treated just the same one year as another, so for that reason you should hardly discredit a cow that you bought the first year.

*Question:* How long after the cow is fresh before you take this test?

PROFESSOR FRASER: My time is the first week in January, the first week in April, the first week in July and the first week in October, every three months, and test every cow that is in milk in the herd at that time. If just one cow were to be tested I would take the every thirteenth week, beginning seven weeks after she freshened. That would be an ideal way but, of course, with a herd you can not do that. I think it pays to go through this weighing and keep a record of every cow every milking right through the year. We have a good many farmers doing that, especially in Southern Illinois.

MR. WENTWORTH: I wish to say in a preliminary way that the animals which Professor Fraser has shown in his chart, that the Holstein–Friesian breed are a very unpopular animal with the average granger in the State of Iowa. I would like to ask him how he made the selection of the dairy breed for the university experiment station; why and by what method did he arrive at the conclusion that the Holstein should be the animal for that purpose?

PROFESSOR FRASER: We have a barn that will hold thirty-nine head and decided that was the size of the herd we should keep. In order to do good work in breeding and to illustrate breeding to the students, we can not keep four different herds, so we decided that we would simply breed one of those breeds and keep from three to five cows as specimens of the other breeds, and it seems to me that is a very good proposition for any agricultural college to follow. The matter of selection and breed, it seems to me, is not the great importance, because you can illustrate breeding with one breed as well as with another. It does not seem to me of much consequence which breed you take.

To answer Mr. Wentworth's question will state that when we selected this breed it seemed to fit our necessities better at the university, the purpose for which we wish to keep dairy dows, and also because I think in the State of Illinois the Holstein, as a rule, is probably more popular than any other, for the reason we have large condensing factories there, and as you know condensing factories like milk that contains three and one-half per cent of butter fat.

MR. BARNEY: I would like to ask Mr. Wentworth a question. I believe he said that the Holsteins were unpopular in Iowa. Perhaps I could agree with him in that, but I would like to ask him what breed of cattle is not unpopular in Iowa?

MR. WENTWORTH: I will say, individually, there is no breed of dairy cattle that is not unpopular in the State of Iowa. I can only say to my shame that out of 225,000 people we have in making up the population of Iowa, there are not 1,000 dairymen. I am sorry for that. Iowa is leading the world as a dairy State and still it is a side issue, the old woman and the boys are doing the milking. As a general proposition that is what you will find. I am personally very much in favor of the dairy products, and if I were located so that I could deal exclusively in the farm animal and farm products, I would not be able to hold down my job as president of the Iowa Improved Stock Breeders' Association another term, and I would keep the Holstein cow, for the reason that you can sell four per cent milk by running it through a separator, as we have done on the farm at home and have the skim milk to feed our calves and pigs, and if you desire to sell the calves, you can sell them for better profit than any other calf for veal; your cows will grow up and you can sell them to Illinois farmers, if you are foolish enough to sell your good cows, and get better profit than from any other breed of animals in that line.

PROFESSOR FRASER: If I knew that any dairy breed was unpopular in this State, I don't know that I would have the courage to talk here. I have given illustrations of two other breeds here, so you would not think I was a Holstein man.

MR. WENTWORTH: We need the education you have given us. I believe that fifty per cent of the sour milk going into the creameries all over the State of Iowa would be obviated if we were milking Holstein cows instead of milking the other breeds of cows. In other words, the Holstein milk will keep sweet, maintain its normal condition, longer than milk from any other animal. It does not sour as quickly. You can take the milk from a Shorthorn cow, the milk from the Jersey, and milk from a Holstein and set the three together and you will find this true Is there any man here to dispute that point? I have tried it and proved it. The reason I became so partial to the Holstein is due entirely to my family physician. My wife and two daughters suffered from typhoid fever and our physician told me to buy a cow because the milk we were getting was impure. He told me to get a good Holstein cow. As that was new to me, I asked him why a Holstein. I thought, like a whole lot of others, that if I wanted a good cow I would get a Shorthorn, that I would not consider anything else. I would cut out the Jersey for the reason that I like to have something that will stand up when I milk her. I do the milking myself and I believe there is a palatability which the Frenchman calls "the aroma of the bouquet" in the Holstein milk that is not in any other milk.

MR. ANDERSON: Why is that?

MR. WENTWORTH: There are a good many things I can not explain. We have to go to higher power to find out this. It is simply a breed characteristic. I will say another word, and that is that probably the best herd of dairy animals in this country was the herd that was built up by Mr. E. D. Tillson, of Tillsonburg, Canada. Do you know of a better one than his, Professor Fraser? He started in with the Shorthorn breed. He was English, as was my ancestry. We love the good old English roast beef and love the old English animal. He started in with the old typical animals, Shorthorns. Nevertheless he got it into his head that he was not getting the right kind of dairy animal. After a good deal of thought he went out and bought as Professor Fraser did. He found a good Holstein bull with a record. He had one with pride of ancestry and pride of posterity both in his makeup. He bought one of the calves that came from the bull and from that time on he went to breeding those pure bred Holstein cows until he built up a herd that year after year produced on an average six hundred pounds, and one year almost seven hundred pounds per cow as the result of this breeding. Going back to a personal matter, I bought one of those cows and liked her so well that I bought two more, so we had three of those thoroughbred cows, and there was not one that failed to produce over four hundred pounds of butter a year.

I test a little different from Professor Fraser, and I like my way the best. We take a sample night and morning every Sunday. Any farmer can do this without much trouble. In order to be fairly honest with my cow, I multiply the weight and test that I obtain by seven, and use that as the amount for the previous week, not the subsequent week. I take the last day of the period and not the first day. Another point, the cream on the Holstein milk does not rise as rapidly as it does on milk from other breeds, which makes it an ideal dairyman's milk when he is selling straight milk from the cow, without putting it through a separator or anything of that kind. The cream remains in the body of the milk longer than with any other breed. I believe it takes twice as long for the cream to rise on Holstein milk as on Jersey or special purpose breed. Did you ever notice that Mr. Peterson, or Professor Fraser?

PROFESSOR FRASER: Not the exact length of time, but I do know that it rises much quicker on the Jersey than on the Holstein.

THE PRESIDENT: Mason City has an institution of which she is very proud, and she is proud of it for the reason that there is no other like it in the United States. We have a Memorial University here, an institution founded by the sons of Veterans as a monument in commemoration of the deeds of their fathers in the war of the Rebellion.

I have the honor of introducing to you this afternoon the president of that institution—President Tucker.

## ADDRESS.

MR. TUCKER, PRESIDENT MEMORIAL UNIVERSITY, MASON CITY, IOWA.

*Mr. President, Members of the Iowa StateDairy Association*—I hardly feel that it is proper for me to interrupt the discussion that has been carried on by Professor Fraser. I regret exceedingly that I have been unable to meet with you during your sessions, but when I heard that Governor Cummins had the grip I prcoeeded to do likewise as a preparation for this afternoon, and it has been that which prevented me from meeting with you and, as it is, I shall not take much of your time. I simply wish to fill my part of the engagement in promising the officers of your association that I would be present this afternoon, and that is the reason I am here. Not that I have any large chunks of wisdom to throw out to you to digest for the coming year, but to say just a word concerning some observations that I have been making for the last few weeks.

We understand that we are in one of the richest states agriculturally in the Union. It is between two great rivers, the Missouri and the Mississippi. As we think it over, our minds naturally turn to that fertile country of Messenia which lies between the two great rivers Euphrates and Tigre, where once there was a rich population; but now where civilization has passed. How much we received from that civilization we know not, but we know there are the remains of a highly agricultural life there. We see the remains of their irrigation canal, but the desert has, in the years since civilization flourished there, been creeping upon it, onto this fertile soil, and because of the laxity of the government, because of existing conditions there, there has not been the rejuvenation of that country, and how to remedy that is the question for the world to answer. It has been said that the Emperor of Germany had his eyes turned in that section of the country, and it has been rumored that those irrigation canals would be dug out and the country again would blossom like the rose.

But, in the meantime, the question we have to solve, is how shall we use the great agricultural facilities of this new country between two great rivers in which we live. As I was thinking of meeting with you this afternoon, I thought of my own experiences on the farm and I thought of the advancement and progress in agriculture since 1850. There were indications of progress and there was lots of preliminary work done preceding that date, but since 1850 we have seen great progress in the development of agricultural machinery, agricultural methods, and in the organizations whereby men co-operate one with another, and some wonderful ideas concerning agriculture have been worked out since that time. We tell about the development of the plow; we know something of the crude things that were used for the breaking up of the soil. We know of the development in agricultural machinery, and I may say to you, without perhaps asking your pardon for referring to myself personally, that it was my privilege to rustle with the hard work of a New England farm and I had the experience of dipping candles and making them into moulds for the home. We had the old methods in the dairy We did not have to bother ourselves with any arithmetic in New England, not at all; but, on the other hand, I might say we did not bother ourselves with the income from the dairy because we did not use arithmetic, compution and calculation.

We had to use the scythe and we had the old fashioned method of pitching on hay and pitching it off. Then we had the mower, and I am not so old yet, but I know the prejudice that existed against the mower. The people said the mower would destroy the meadows, and they would not use it. And so, under those conditions, I had grand experience for twelve years in agriculture and I have been closely associated with agricultural interests, and I can look back and see the wonderful improvement that has been made.

It is not necessary for me to refer to the wonderful development that has been made in the dairy industry, the wonderful application of chemisty to the dairy work, and the wonderful application of mechanics to improve the different phases of your life, and the wonderful ability and knowledge of animal life in the breeding and protection of the dairy cow of today.

Look back and see that cows came to us in the early days of this country. I understand, from reports, that the cow came to Jamestown, Virginia, about 1611, and that it was preceded two years by the coming of the horse. In 1624 the cow came to Massachusetts. Those two dates represent the coming of cows from Devon, England. Later cows came to the New World from an island near Holland, then from the Jersey Island, and of course you all know how you worked out the development of the animal industry in this country and the wonderful progress that has been made. Man has come to learn more about this wonderful animal, and the cow has progressed with him in the progress of our country. We have learned to respect the cow, and when man comes to respect the cow he comes to respect himself.

I am going to say just a word about the progress of our country in general lines, just a word of prophesy as to the future. In the first place, we know the dairy industry constitutes one of the great interests of our State. Your president in his address told you that. We know furthermore, that we are not living apart from other nations; we know we have competitors in Canada, in Denmark, in Sweden, in Siberia and other parts of the earth so far as the dairy interests are concerned. We know that in wheat and corn we have our competitors. We know there has been wonderful progress in all the walks of agriculture in the last few years. Only a few years ago our Department of Agriculture at Washington was considered something of a laughing stock, especially on the part of the citizens of the District of Columbia; and we know, furthermore, there has been until the last few years a sort of natural distrust on the part of the farmer with reference to scientific methods of agriculture, with reference to our experiment stations, our agricultural colleges and schools. All this has been done away with, and the Department of Agriculture at Washington today, in the eyes of the people who live in the District of Columbia, stands above all other departments. Secretary of Agriculture Wilson said in conversation last winter that when he took hold of that department he was unable to do his best work, simply because he did not have men equipped to work well; he did not have men trained for the various departments which he wished to establish. But today we find there are new varieties of grain being introduced into this country; we find that there is being great and valuable work being done at our experiment stations in Wisconsin, Minnesota, the Dakotas and in our own Agricultural college at Ames, and in Illinois. They are experimenting with corn and wheat, trying to increase the varieties and establish a variety that will make a larger yield, and what is true of corn is true of many other things grown in this section.

So the knowledge of agriculture is extending far and near. Then again, when we find there is some disease that is attacking some one of our products, we have the whole world to draw upon to find something that will meet that disease and check it. We have sent our scientists as far as China for something of that sort.

So we have come today not in relationship with dairy conditions, with agricultural conditions in Iowa alone, not alone into relationship with conditions of this middle West, but we are coming more and more into world relationship, so that whatever may be our specific interest, whatever may be our own particular line of work, we are not separated from the world; and if we are efficient in our own line of work, if we are methodical, if we have scientific mastery or the same, so much more is there a scientific mastery of the work of the world and we have our relationship with that work.

Then there is this thought today, we can not stand idly by and allow the events of the world to pass unnoticed; there is more in our life than that in which we have a direct interest. Take the great problems of statecraft. In fact the progress of our land has been so great, the development of our natural resources has been so rapid, the development of science has been such that some of our laws and statecraft have not kept up with it. While we are considering this wonderful development, let us see if there is direct relationship between educational facilities and these factors of wealth.

I have sometimes wondered why we have so many educational institutions; have asked whether the college man had anything to do with the practical side of life. If I were going to name some industry that was a practical industry, I think I would be safe in naming dairying as one. We find in a practical industry there is something that has tangible results, and you are looking upon it as tangible. With your interpretation of that word, and my interpretation of that word, we find that back of the wonderful progress we have had, we go back to find that some man working alone in his laboratory, working at something that appeared to be an abstract proposition, had no relationship, so far as we could see, to everyday life of the farm, was really the man getting at the secret, getting at the results in the ways at last which we have taken and applied to our problems of the farm.

So we can not go forward in any industry, starting from the practical side of it, but we go back and find men *who* have been working along in that line, have been contributing something to the ultimate result. And so I want to bring this one thought to you—let us respect the calling of each other. Let us respect the work and the calling of the other man, whatever it may be; let us come to a realization that some way we will find where your work and my work meets, and we are mutually dependent one on another. Let us respect the nations of the earth. There are great movements taking place among nations. They are undoubtedly the action and reaction between Germany and Russia, between Japan and China; and we are coming to understand that other nations will awaken to these scientific things, and they are going to apply science to their problems.

Someone has said that our agricultural department at Washington is trying, as far as possible, to introduce foreign plants in our land and enable us to raise in this land of ours everything that we need for ourselves. Now, assuming that that is possible, supposing that we do raise, that we are able to produce everything that we want in our own land, then it must stand to reason that if there is a surplus we have got to sell it, but we can not sell it to other nations unless we buy of them.

Another thought that leads to it is not whether that will be true or not, but we must give our attention today, more than ever before, to the problems within our own borders. As to whether our foreign trade may be increased in this country, and as to whether we are going to come into competition with others in that foreign trade, and so on, will work out in some way or another. But the point is this—we have met great advancement in our methods of production, in our educational institutions along the line of agriculture, and our experiment stations have been making wonderful progress. We have records of the same that cover volumes, telling us of careful scientific research. And men today are not putting agricultural colleges and professors of the same in a class by themselves and considering that men who occupy positions in the classical colleges are a superior race. Not at all. They are coming to understand that the agricultural problems that have been worked out here require the highest thought and brains, the greatest persistency and most careful work that is demanded by any professor in the land.

And so this work itself, this study of plant life and animal life, looking at the economical side alone, is as fascinating if not more so, than any other realm of science and it has its direct bearing upon our Nation, because one of the great men of the middle of last century said that our perfect agriculture must lay as the basis of all industries.

And so we come to get great thought of all. We have been dealing in the last half century with mechanical laws and chemical laws looking to increase our production either to growing more corn on the same area or making a smaller area produce the same amount of corn that we now grow on larger field. In all these ways we have been increasing the product of the farm, but what have we been doing in increasing manhood? for in dealing with those laws, in working out this mechanical side of our industry and chemical side as well, we have been dealing with things that tend to make better men and women for, relatively speaking, we do not need as large manhood and womanhood to deal with these things as we do when we have to protect it, to so distribute it so that it will make the very highest and best in our land.

I would say one word about the conditions of today and the problem we have to solve. Some of the problems are of such character that we have very little of the past for our guidance and direction, and the interests concerned are so immense in their bearing upon the welfare of the people that we feel that we must go slow. We feel that there are great interests at stake and that we must go slowly but surely, just as Lowell has said "that the politician goes by the guidance of a lantern; but the statesman goes slowly but surely, guiding his feet by the stars." So that we must enter into the life of the future, and enter into the legislation, and into all things that effect the distribution of our products today; enter into the whole relationship which must exist between one part of the country and the other; enter into relationship that must exist between railroads and shippers. The great essential laws, not alone the mechanical laws and physical laws upon which all these problems are based, but the great essential laws of justice.

It takes a larger manhood to take the advance in this world. We are at the point where we have been giving our attention to all these things; we have been making rapid progress and we are getting so we can increase the products of the farm and sell them, we have mastered the conditions instead of allowing them to master us, and now the knowledge comes to you and me and every citizen of this land and says this: We are wealthy. The products of the prairies, the products of the hills, of the towns and of our industries are sufficient for a strong and beautiful civilization. There must then be manhood enough and courage enough and justice enough in this land to make the distribution of these products, not by an arbitrary mode, but according to merit, according to our own integrity, so that poverty shall be eliminated from our land as far as possible, that there should be justice or, as someone else has said ''A square deal for every man,'' and in order to have that worked out in our civilization we have to turn our attention to it.

While we shall progress still further in methods of production, yet with that there is the demand for that manhood and citizenship that will take a broad view of our relationship, that will consider the greatest good for the greatest number, and will realize that in this production there must be certain methods of distribution; there must be perhaps new ideas concerning the relationship of man to man.

We can show you, for example, the progress of our inventions. · We can show you that we have been moving forward from the use of the lever and the crudest steam engine, to the giant locomotive; we are using that power for the use of our street railways, for pushing our cars, that wonderful force that we call electricity, and all this requires more and more delicate machinery. And so we find, as we go into the mechanical world, that the machinery is far more delicate, our engines are more complicated; the machinery on our best steamships is more delicate and more powerful, and it requires a greater mind, a more educated man to run these things. A man with more brains and power. Everywhere there is a call for a larger manhood.

A young man has recently written a book, and in this book he states that in our land today there are ten million people who are in poverty. He means by that that there are ten millions, some of whom have not enough for their maintenance, and the rest he makes up from the people who are laboring simply to get enough to exist. They have no margin for the finer things of life; they are on what we might call on the very verge of starvation, though not starving.

We can not remedy all these things at once, and we may not be able to remedy them all in time, but it is well for us as men to think of these things. It is well to look back in the early days and see how this progress was made. We find in the early days that man had to use all his time to get something to eat. Bye and bye he began to exert his mastery over the animals; then he began to cultivate the soil and he found that it made such returns in food that he was not obliged to give all his time, to devote his entire attention to getting food, and then he began to invent things that meant further progress in our civilization.

If we want to keep the progress that has been made, if we want to go still farther, then we must see to it that not only you and I have that margin, but must see to it that as many as possible, according to their deserts, have that margin of time. If there is a large surplus of wealth, then we have to study these things. I do not mean to say that this tends towards socialism or anything of that kind. It tends to what I would call "commercial democracy," where there can be equal opportunity for everyone, and then let every man and woman work out their own individuality. We are coming more and more into close relationship with each other.

We know the influence the pioneer has had on civilization in the past, but the frontier, as we knew it then, has passed away and we have nothing of that kind, so we will be compelled in the next fifty years to solve some of these things as well as the methods of production. How we can live together in peace and harmony; how we can develop justice and right; how we can make an even and equitable distribution of the surplus of the products of the earth; how we can realize the highest type of manhood and womanhood which we have in our minds. These are the great problems for the next fifty years.

Production has been brought to a high standard, but the distribution of the wealth must be solved on an equitable basis; and there is a demand for that today, and the man who talks about that is not a socialist, is not an extremist. We are facing these conditions and they must be met. I believe there are men enough in America to meet those problems and to solve them.

I thank you for your kindness in listening to me.

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THE PRESIDENT: We will now listen to the reading of the resolutions by the chairman of the resolution committee, Hon. H. R. Wright.

### RESOLUTIONS PASSED.

*Resolved*, That this convention desires to express its hearty appreciation of the efforts of the commercial club and the citizens of Mason City to make this twenty-eighth annual meeting of the Iowa State Dairy Association such a glorious success.

*Resolved*, That we tender our thanks to the press of this city, who so kindly contributed towards the success of this meeting.

*Resolved*. That this convention expresses its hearty appreciation for the asssistance of Mrs. J. E. Moore, Miss Maude Blythe, Miss Edna E. Lowe and Miss McAllister in their very acceptable rendering of choice selections of vocal and instrumental music and select readings, all of which added much to the pleasure of this meeting.

*Resolved*, That we also express our thanks to our old friend Jules Lombard, who, not only in this convention, but in all our past meetings, has cheered us by his beautiful songs and kindly greetings.

WHEREAS, an All Wise Providence has removed from our midst, our beloved brother, Fred L. Kimball, and

WHEREAS, We deplore the great loss of our friend, who has ever been with us in the good work of this association, and was ever a friend and a helper in its needs; Therefore, be it

*Resolved*, That in the death of Fred L. Kimball, the association has suffered an irreparable loss, and we hereby extend our heartfelt sympathies to his bereaved family.

*Be it Further Resolved*, That a copy of these resolutions be sent to Mrs. Kimball and the dairy press.

*Resolved*, That we are altogether opposed to any changes in the Grout law, looking toward a reduction of the ten cent law on colored oleomargarine. That we believe this law is founded on right and justice; that it injures no legitimate industry, and that it interferes only with a fraudulent and vicious business. That we endorse the work of the National Dairy Union, and again pledge it our continued sympathy and support.

*Resolved*, That we endorse the plan of holding local dairy meetings; that we commend the efforts of those who have given their services in this direction; and we urge that this plan be more widely extended.

*Resolved*, That we are in hearty sympathy with the ideas of President Roosevelt, as proclaimed in his message, relating to increased powers for the Interstate Commerce Commission in fixing railroad rates; and that we urge the senators and congressmen from this State to assist in getting us speedily an efficient law in this respect.

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MR. WENTWORTH: Mr. Chairman, I would like to suggest the adding of another resolution. There is now a bill before Congress providing for giving an increased appropriation to the State's experiment stations from the National Government. The bill was introduced by Congressman Adams, of Wisconsin. Each State experiment station has $15,000 appropriation for experimental purposes. That law is thirty years old, or more, and has not been changed in all these years, and the work has grown and branched out very largely since that time. Congressman Adams proposes by this law, if passed, to add a little each year until they have double the sum they are now receiving. This bill is known as the Adams bill, and there are several congressmen in the State of Iowa, including Mr. Haugen, who are opposing it. Mr. Haugen is a member of the committee of agriculture and he is opposing that bill to increase the fund for the State experiment stations. I, therefore, move that the resolution committee be empowered to express the sentiment of this organization in favor of the increased appropriation for experiment stations, and incorporate it as part of these resolutions, and that a copy of this one resolution be telegraphed to Gilbert N. Haugen, at Washington.

Motion duly seconded and carried.

On motion, duly made and seconded, the resolutions were adopted as read.

THE PRESIDENT: I wish to say that I reappoint the legislative committee just as it was before, also the auditing committee with the exception of one place left vacant by the removal of one of the members from the State, which place will be filled by Mr. W. J. Davis, of Manchester.

On motion, duly seconded, the meeting adjourned.

## MEMBERSHIP.

| Name. | Address. |
|---|---|
| Anderson, A. E | Oelwein, Iowa |
| Ahrens, F. H | Waterloo, Iowa |
| Armstrong, J. C., of Marsh L. Brown Co | Chicago, Ill. |
| Anderson, M | Audubon, Iowa |
| Aunger, A. T | Lu Verne, Iowa |
| Ambler, H | Oxford, Iowa |
| Abbott, F. O | Mt. Etna, Iowa |
| Adams, A. H | Storm Lake, Iowa |
| Allard, G. F | Newell, Iowa |
| Armstrong, C. R | Plymouth, Iowa |
| Adams, L.C | Lone Rock, Iowa |
| Barney, Robert A | New York Produce Review, N. Y. |
| Bettern, Chas | Webster City, Iowa |
| Bancroft, H. P. | Maquoketa, Iowa |
| Bair, S.B | Webster City, Iowa |
| Behren, John | Pomeroy, Iowa |
| Bowen, Geo | Mason City, Iowa |
| Bimms, S | Fredricksburg, Iowa |
| Blunt, Joe | Garner, Iowa |
| Brown, F. M | Cedar Rapids, Iowa |
| Blunt, G. E | Milford, Iowa |
| Benson, W. S | Dubuque, Iowa |
| Bickle, J.D | McGregor, Iowa |
| Brownlee, B. O | Kanawha, Iowa |
| Bickle, W. F | McGregor, Iowa |
| Boe, O. E | Calmar, Iowa |
| Bergesather, R. S | Northwood, Iowa |
| Brokaw, H | Clarksville, Iowa |
| Borland, G. W | Oelwein, Iowa |
| Bull, G. W | 210 South Water Street, Chicago, Ill. |
| Beach, C. N | Alpha, Iowa |
| Brunner, Frank | Charles City, Iowa |
| Banta, A. E | Wheatland, Iowa |
| Brandt, C. E | Fairbank, Iowa |
| Buehver, O. H | Alta Vista, Iowa |
| Balken, G. A | Ridgeway, Iowa |
| Bullis, H. R | Cedar Rapids, Iowa |
| Bentz, A. H | Delhi, Iowa |
| Brunner, J. J | Charles City, Iowa |
| Baittinger, John | Ladora, Iowa |
| Barker, J. A | Monona, Iowa |
| Blood, Wm. E | Cedar Rapids, Iowa |

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| Bouska, F. M | Ames, Iowa |
| Baldus, T. F | Jewell, Iowa |
| Ballard, H. R | St. Paul, Minn. |
| Barlow, Iver | Calman, Iowa |
| Brandis, C. H | Hancock, Iowa |
| Bristol, G. A | Primghar, Iowa |
| Beck, John | Goldfield, Iowa |
| Burt, Roy S | Terril, Iowa |
| Boosing, D | Buffalo, N. Y. |
| Barkelow, W. S | Clarksville, Iowa |
| Bakken, M. E | Quandahl, Iowa |
| Balfang, Henry | Rockwell City, Iowa |
| Baker, E. M | Monticello, Iowa |
| Bickle, A. M | Mason City, Iowa |
| Bair, Charles | St. Paul, Minn. |
| Baird, S. N | Dubuque, Iowa |
| Barney, W. B | Hampton, Iowa |
| Chamberlin, A. M | Waterloo, Iowa |
| Cranston, W | Waterloo, Iowa |
| Cherry, H | Cedar Rapids, Iowa |
| Crowther, J. A | Ft. Dodge, Iowa |
| Crawford, A. W | Osage, Iowa |
| Cox, D. M | Grinnell, Iowa |
| Casey, Wm | Chicago, Ill. |
| Commerford, P. J | Jerico, Iowa |
| Cole, C. L | St. Paul, Minn. |
| Clausen, C. M | Owl Lake, Iowa |
| Cummings, J. D | Cedar Rapids, Iowa |
| Coughlan, Frank | New York, N. Y. |
| Cappen, C. H | Westgate, Iowa |
| Crabb, W. R | Greeley, Iowa |
| Clark, T. A | West Bend, Iowa |
| Carr, C. E | Frederika, Iowa |
| Churchill, C. R | Royal, Iowa |
| Conway, C. R | Garner, Iowa |
| Christensen, A | Jesup, Iowa |
| Crocker, H. M | Alta, Iowa |
| Cagley, J. W | Nashua, Iowa |
| Colbert, H. H | Menlo, Iowa |
| Cochran, A | Stuart, Iowa |
| Cappen, Ed | Devon, Iowa |
| Clark, S. F | Sioux City, Iowa |
| Carmody, Thomas | Whittemore, Iowa |
| Colbin, W. J | Omaha, Neb. |
| Del Strother, Ed | Waterloo, Iowa |
| Dalziel, H | Algona, Iowa |
| Davis, Elmer | Bloomfield, Iowa |
| Droste, Chas. F | New York, N. Y. |
| Davenport, Harvy | Mason City, Iowa |
| Dickey, W. G | Topeka, Kan. |

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| Davis, W. J | Manchester, Iowa |
| Dawson, M | Clarion, Iowa |
| Daly, J. C | Charles City, Iowa |
| Duffery, M | Fairbank, Iowa |
| Drysdale, A. C | Dubuque, Iowa |
| Dadswell, T | Geneva, Iowa |
| Davis, W. H | Chicago, Ill. |
| Day, C. H | Rock Valley, Iowa |
| Doleschal, A. J | Bancroft, Iowa |
| Dawson, J. F | Masonville, Iowa |
| Durkee, A. F | Denison, Iowa |
| Dahlen, N. O | Tenold, Iowa |
| Davis, C. W | Ashton, Iowa |
| Driver, D. L | Burt, Iowa |
| Engleking, J. H | Mason City, Iowa |
| Edmiston, Geo. F | 1400 Tribune Building, Chicago, Ill. |
| Eldridge, C. J | Chicago, Ill. |
| Elder, C. D | Manchester, Iowa |
| Elvidge, A. O | Elkader, Iowa |
| Ellinger, J. G | Fern, Iowa |
| Envoldson, M. E | Gilbertville, Iowa |
| Erb, R. J | Arbor Hill, Iowa |
| Edwards, L. S | Lamont, Iowa |
| Elliott, Chas. T | Cascade, Iowa |
| Evans, Elzie | Bradgate, Iowa |
| Floeschinger, A | Oxford, Iowa |
| Foreman, A. L | Chicago, Ill. |
| Fitch, W. S | 10 Harrison Street, New York, N. Y. |
| Fitch, I | Fairbank, Iowa |
| Fullerton, W. R. L | Philadelphia, Pa. |
| Fest, P. E | Whittemore, Iowa |
| Fridley, A. E | Sumner, Iowa |
| Feldmann, J. B | Dyersville, Iowa |
| Forrester, H. E | Fredericksburg, Iowa |
| Fisher, F. H | Greene, Iowa |
| Frank, Ben | Titonka, Iowa |
| Fjetland, G. M | Ellsworth, Iowa |
| Finnegan, John | Jerico, Iowa |
| Farnham, J. C | Rockford, Iowa |
| Fisher, N. W | Mason City, Iowa |
| Freese, A. J | Cedar Falls, Iowa |
| Fosse, O. A | Ridgeway, Iowa |
| Graham, E. J | Cedar Falls, Iowa |
| Galbraith, H. R | Sioux City, Iowa |
| Gude, W. A | New York, N. Y. |
| Grestenberger, L | Hazelton, Iowa |
| Gallager, T. F | Chicago, Ill. |
| Gerrich, C. L | Lu Verne, Iowa |

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| Gould, W. S | Des Moines, Iowa |
| Gromman, J. H | Manchester, Iowa |
| Gudvangen, E. A | Vinje, Iowa |
| Gehrls, Wm | Germantown, Iowa |
| Gibbs, L. J | Waucoma, Iowa |
| Goodridge, DeWitt | Goldfield, Iowa |
| Goodnow, M. J | Correctionville, Iowa |
| Gurler, Wm. O | De Kalb, Ill. |
| Hougland, A. C | Owatonna, Minn. |
| Haugdahl, Sam | St. Peter, Minn. |
| Hathorn, W. H | Mason City, Iowa |
| Hart, D. M | Des Moines, Iowa |
| Hunt, W. E | Fayette, Iowa |
| Hansen, E. D | Maquoketa, Iowa |
| Hoover, J. A | Lake Mills, Iowa |
| Hayes, C. F | Estherville, Iowa |
| Hilman, Chas | Cedar Rapids, Iowa |
| Howe, H. C | Owatonna, Minn. |
| Hazelrigg, S. M | Cedar Rapids, Iowa |
| Hazelrigg, John | Mason, City, Iowa |
| Hart, C. N | Providence, Iowa |
| Heilman, Fred | Hamlin, Iowa |
| Hadley, R. R | Zearing, Iowa |
| Homan, E. H | Artisian, Iowa |
| Herman, A. J | Maple Leaf, Iowa |
| Hessell, F. W | Waterville, Iowa |
| Heathman, George | Plover, Iowa |
| Helfter, G. L | Osage, Iowa |
| Hanson, H. B | Dunbar, Iowa |
| Howard, F. E | Dale, Iowa |
| Hoopman, E. A | Chester, Iowa |
| Hicks, O. W | Guernsey, Iowa |
| Hollenbeck, H. F | Wesley, Iowa |
| Heffren, G. H | McGregor, Iowa |
| Heath, Charles E | Rowan, Iowa |
| Heald, J. M | Nashua, Iowa |
| Hough, Walter | Newton, Iowa |
| Iliff, B. C | St. Ansgar, Iowa |
| Jennings, A. A | Chicago, Ill. |
| Johnson, A. W | Chicago, Ill. |
| Juhl, J. N | Hampton, Iowa |
| Johnson, V. V | Burr Oak, Iowa |
| Johnson, W. B | Arlington, Iowa |
| Jorgenson, Soren | Fredsville, Iowa |
| Jensen, P | Exira, Iowa |
| Janes, Fred | Charles City, Iowa |
| Jensen, M | Harlan, Iowa |
| Kendall, W. L | Cedar Rapids, Iowa |

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| Kieffer, P. H | Manchester, Iowa |
| Koch, A. J | Keystone, Iowa |
| Kliegn, James | Cylinder, Iowa |
| Kroninger, H. J | Fredericksburg, Iowa |
| Kelly, T. F | Sioux City, Iowa |
| Khls, Gus | Sumner, Iowa |
| Kennedy, G. W | Thornton, Iowa |
| Kessler, A. G | Mason City, Iowa |
| Kernam, W. F | Cedar Rapids, Iowa |
| Kenyon, F. H | Granville, N. D. |
| Knudsen, C. T | Radcliff, Iowa |
| Krause, E. H | Eldora, Iowa |
| Knudsen, N. H | Emmetsburg, Iowa |
| Koneke, H. C | Hudson, Iowa |
| Kuemsen, B. H | St. Lucas, Iowa |
| Kucker, Wm. D | Fairville, Iowa |
| Kinsler, E. A | Durant, Iowa |
| Keachie, J. L | Dexter, Iowa |
| Klemesrud, Sig | Osage, Iowa |
| Kinney, A. R | Ottawa, Minn. |
| Knief, G. H | Minkler, Iowa |
| Kindsburg, A | Dike, Iowa |
| Kennedy, J. | Le Mars, Iowa |
| Lunkenheimer, Jacob | Mankato, Minn. |
| Lagen, V. A | Sioux City, Iowa |
| Lowitz, Chas. C | Wyandott, Mich. |
| Larsen, J. E | Sioux City, Iowa |
| Lundberg, A. C | Northwood, Iowa |
| Lawson, C | Ames, Iowa |
| Lauridsen, J. E | Pomeroy, Iowa |
| Lorenze, P | Milton, Iowa |
| Lillebridge, C. M | Manchester, Iowa |
| Leighton, F. A. | Leighton, Iowa |
| Laird, S. W | Walker, Iowa |
| Ladaga, H. C | Buck Creek, Iowa |
| Languist, G. F | Saude, Iowa |
| Landis, A. L | Colesburg, Iowa |
| Landis, Geo | New Vienna, Iowa |
| Lehman, Fred | Coggan, Iowa |
| Loomis, G. R | Dumont, Iowa |
| Laughlin, W. L | Osage, Iowa |
| Mallard, F. H | Waterloo, Iowa |
| Martin, A. H | Mason City, Iowa |
| McKay, G. L | Ames, Iowa |
| Marriott, J. H | Long Grove, Iowa |
| Merck, J | Mason City, Iowa |
| Mitchell, E | Vinton, Iowa |
| Meinhart, F | 253 La Salle Street, Chicago, Ill. |

| | |
|---|---|
| Moore, J. G | Madison, Wis. |
| Mauzke, W. F | Chicago, Ill. |
| Mansager, M. J | Ellsworth, Iowa |
| Marsh, W. W | Waterloo, Iowa |
| Miller, D. A | Sheldon, Iowa |
| Miller, F. L | Steamboat Rock, Iowa |
| Markle, A. H | New Hampton, Iowa |
| Manderville, P | Chicago, Ill. |
| McIntire, T. J | Alpha, Iowa |
| Morial, W. H | Sioux Falls, S. D. |
| Moore, W. S | Chicago, Ill. |
| Martin, H | New Sharon, Iowa |
| Morck, Christ | Jewell Junction, Iowa |
| McNairy, H. L | Britt, Iowa |
| McCaffrey, J. E | Earlville, Iowa |
| McCartny, A | Leon, Iowa |
| McKay, G. W | Buckingham, Iowa |
| Nichols, S. B | Mason City, Iowa |
| Nagle E. L | Deep River, Iowa |
| Newell, F. C | Fenton, Iowa |
| Nietert, H. J | Walker, Iowa |
| Nielson, J. P | Brayton, Iowa |
| Nelson, B. S | Swea City, Iowa |
| Nagel, W. J | Scarville, Iowa |
| Nymann, P | Jacksonville, Iowa |
| Nelson, Noreal | Algona, Iowa |
| Olds, E. B | Sumner, Iowa |
| Odell, F. L | Greenfield, Iowa |
| Opperman, H. H | Fairbank, Iowa |
| Palmer, D. A | Monticello, Iowa |
| Peterson, W | Steamboat Rock, Iowa |
| Peterson, Peter | Voorhies, Iowa |
| Packer, F. R | Dubuque, Iowa |
| Pallerd, L. A | Sand Springs, Iowa |
| Petterson, P. N | Rake, Iowa |
| Peterson, L. C | Story City, Iowa |
| Port, C. C | Maquoketa, Iowa |
| Peterson, S | New Hampton, Iowa |
| Pettibone, H. W | Fenton, Iowa |
| Patterson, Sam | Austinville, Iowa |
| Palmer, G. A | Parkersburg, Iowa |
| Reynolds, Howard | Mason City, Iowa |
| Reynolds, Walter | Mason City, Iowa |
| Rundell, W. E | Cedar Rapids, Iowa |
| Russler, C | Hawkeye, Iowa |
| Ruse, Bert. M | St. Paul, Minn. |
| Rehorst, H. J | Monticello, Iowa |
| Rundall, J. C | Chicago, Ill. |

| | |
|---|---|
| Reed, S. B | Des Moines, Iowa |
| Rockwell, P. V | Belle Plaine, Iowa |
| Rhynsburger, D. R | Pella, Iowa |
| Richards, F. S | McGregor, Iowa |
| Riley, Frank | Fostoria, Iowa |
| Rohde, C. J | Manchester, Iowa |
| Remington, A. L | Ruthven, Iowa |
| Ross, J. J | Iowa Falls, Iowa |
| Richards, Louis | Forest City, Iowa |
| Sudendorf, Ed | Clinton, Ill. |
| Shilling, S. B | Mason City, Iowa |
| Smarzo, W. S | Manchester, Iowa |
| Smith, W. E | Des Moines, Iowa |
| Sibert, J. G | Waterloo, Iowa |
| Slater, E. K | St. Paul, Minn. |
| Sheridan, J. T | Wyandotte, Mich. |
| Stanhope. J. T | Sioux City, Iowa |
| Smith, J. R. | care W. S. Moore Co., Chicago, Ill. |
| Smith, W J | Waterloo, Iowa |
| Scott, Z. D | Dubuque, Iowa |
| Shoemaker, E. R | Waterloo, Iowa |
| Safford, F. O | Des Moines, Iowa |
| Stadtmuller, M. F | Pomeroy, Iowa |
| Sewell, F. B | New Hampton, Iowa |
| Sommer, Fred | New Hampton, Iowa |
| Smith, D. E | Webster City Iowa |
| Sperry, J. H | Grundy Center, Iowa |
| Steutenand, J. H | Mason City, Iowa |
| Stewart, L. J | Janesville, Minn. |
| Swartz, F. E. C | Mason City, Iowa |
| Stowell, J. C | Chicago, Ill. |
| Smith, J. E | Sumner, Iowa |
| Shillengton, W. O | Chicago, Ill. |
| Sommerville, T. A | Chicago, Ill. |
| Saddler, A. F | Waverly, Iowa |
| Sanburg, J. A | Waterloo, Iowa |
| Storvick, T. A | Lake Mills, Iowa |
| Spohn, A. J | Miles, Iowa |
| Schettler, H. C | Baxter, Iowa |
| Squires, B. O | Manchester, Iowa |
| Sheldon, D. E | Waverly, Iowa |
| Soles, Byron | Fern, Iowa |
| Shellman, F. W | Ayrshire, Iowa |
| Stuessi, G | Thorpe, Iowa |
| Smith, S. F | Columbus, Ill. |
| Seinn, Thos. N | Decorah, Iowa |
| Snyder, A. W | Dickens, Iowa |
| Schreiber, Earl J | North Washington, Iowa |

| | |
|---|---|
| Sorenson, Peter | Exira, Iowa |
| Saveraid, P. J | Huxley, Iowa |
| Stratton, J. R | Curlew, Iowa |
| Stephensen, F. W | Dundee, Iowa |
| Sherman, Frank | Fayette, Iowa |
| Sweet, C. E | Portland, Iowa |
| Schlappi, J. F | Ft. Dodge, Iowa |
| Tollefson, J. M | St. Ansgar, Iowa |
| Tower, N. D | Kansas City, Mo. |
| Tysber, L. M | Owl Lake, Iowa |
| Tenold, T. E | Northwood, Iowa |
| Tyler, W. E | Chicago, Ill. |
| Turner, W. E | Mitchell, S. D. |
| Tibbetts, J. L | Osage, Iowa |
| Torsleff, John | Osage, Iowa |
| Thompson, E. E | Lansing, Mich. |
| Trow, A. W | Glenville, Minn. |
| Taylor, L. S | Glenville, Minn. |
| Trimble, N. H | Alden, Iowa |
| Thuesen, Peter | Kimbellton, Iowa |
| Thomas, Guy | Goodell, Iowa |
| Talle, A. C | Northwood, Iowa |
| Tysver, L. M | Owl Lake, Iowa |
| Teeple, J. J | Inwood, Iowa |
| Taff, John | Guthrie Center, Iowa |
| Umbreit, B. W | Clarion, Iowa |
| Vermillion, W. T | 317 Washington Street, New York City, N. Y. |
| Vaala, Lars. G | Saude, Iowa |
| Van Aukin, E. E | Charles City, Iowa |
| Virtue, D. E | Owatonna, Minn. |
| Vargason, E. M | Hazelton, Iowa |
| Vind, A | Mitchell, S. D. |
| Vanderham, C. H | Kanawha, Iowa |
| Wright, H. R | Des Moines, Iowa |
| Woodring, I | Waverly, Iowa |
| Williams, A. M | Fort Dodge, Iowa |
| Wood, H. S | Mount Pleasant, Iowa |
| Wolff, J. T | Chicago, Ill. |
| Whitemore, E. J | Owatonna, Minn. |
| Welton, F. O | West Union, Iowa |
| Witte, T | Whittemore, Iowa |
| Wilcox, F. F | Panora, Iowa |
| Williams, L. R | Jerico, Iowa |
| Wheelock, M. O | Sioux City, Iowa |
| Whitcomb, C. L | Fredericksburg, Iowa |
| White, E. A | St. Paul, Minn. |
| Wolfgran, F | Sumner, Iowa |
| Widdel, Wm | Dewar, Iowa |

| | |
|---|---|
| Wentworth, E. M | State Center, Iowa |
| Wilcox, W. L | Mason City, Iowa |
| Whitney, A. M | Alden, Iowa |
| Wagner, R | Randalia, Iowa |
| Winter, Theo | Williamsburg, Iowa |
| Wendt, H. D | Hopkinton, Iowa |
| Wiese, R | Prairie Rose, Iowa |
| Walch, Ed | Whittemore, Iowa |
| Woodworth, Chas | Waterloo, Iowa |
| Wagner, Robert | Randalia, Iowa |
| Wester, R | Hobart, Iowa |
| Yant, O. P | Manning, Iowa |
| Yorkshire Creamery Co | Ottumwa, Iowa |
| Zubrod, J. M | Boyd, Iowa |

View of Iowa Farm Home, Hardin County.

# PART V.

## EXTRACTS FROM THE STATE DAIRY COMMISSIONER'S REPORT, 1904.

H. R. WRIGHT, DAIRY COMMISSIONER.

## CONDITION OF THE CREAMERY AND DAIRY INDUSTRY.

The creamery and dairy industry in Iowa has a history during the last five or six years that amounts almost to a revolution. Not only has the number of creameries in the State in these years first increased and then decreased very materially, but these changes have not been uniform throughout the State by any means. There has been a general falling off in the practice of dairying in the State but this falling off has been very much more in the western and central parts of the State than in the so-called dairy district in the northeast quarter of the State. It is evident that the causes of the decreases have not affected all sections of the State alike. Six years ago there were still a few gathered cream creameries in the State, but no cream was sent more than a few miles from the farm on which it was produced and none was shipped by rail. At present none of the former gathered cream creameries have changed their manner of business; more than half the creameries of the State receive more or less cream; sixty-one of them, and among the largest ones, ship cream by rail; there are sixty-five creameries that are exclusive hand separator creameries, more than twenty-five thousand hand separator patrons in the State and 40 per cent of the butter made in the creameries is made otherwise than from whole milk.

Iowa's creameries have always made more butter to the creamery than those of other States and the average make has been heretofore about one hundred thousand pounds per annum. On account of the central plants making from a few hundred thousand pounds to a few million pounds this average this year is more than one hundred twenty thousand, and this notwithstanding the fact that there is more than the usual proportion of creameries with a make less than the average. The tendency toward larger creameries is unmistakable even aside from the central plants. The relatively high expense in the smaller creamery makes it certain that they can not long continue to compete with the larger and more economically operated creameries, whether of the local or central variety. This tendency is further accentuated by the impossibility of employing the most expert butter makers in the small creameries because they can not pay wages sufficiently high to get them. Hence their butter is likely to be of poorer quality and bring a less price than that of the well-managed larger creamery.

While the creamery business has not had the smoothest pathway for the last few years from a business standpoint, it is also true that the creameries have suffered from a general decrease in the practice of dairying in this State. This decrease in dairying in the State is both an effect and a cause. It is the effect produced by high prices of other products of the farm. It is the cause of increased interest on the part of a considerable number of farmers in the scientific and modern method of dairying. Indeed, there in a great increase in the interest shown by Iowa farmers in scientific and modern methods as applied to all lines of agriculture. Because the State of Iowa is adapted by climate and soil to the production of dairy products it is certain that the State will always be one of the greatest dairy states, but the increase of the immediate future will not be increase of butter production or of creamery building, but will be increases of profits that will accrue to the individual who continues in the business and adopts the best methods. The efforts of those who would advance and increase the importance of the dairy interest of this State must be in the line suggested. There was a time when the farmer milked his cows because he had to make money enough to live, but that situation was only temporary; now he will milk only when he can be pursuaded that there is sufficient money in the business to make it worth while to practice it, and to submit himself to the confinement and regularity that goes with the dairy business. He will model his dairy and his dairy practice after the manner of those who are getting $40 or $50 or $75 per year from their cows rather than the manner of the "average" dairyman who is lucky if he gets $25 from each cow. There are a few men in almost every county of the State, and many of them in the older dairy counties that are already using a silo, feeding a balanced ration, selecting their poorest cows for sale, and gaining increased profits by so doing. The future will multiply this kind of dairymen for the reason that they will be the ones whose profits are such as to keep them in the business.

Something similar is true in regard to the creameries. The day when a "buttermaker" can be hired for a little more than farm laborers' wages is past, because the creameries are willing to pay good wages for satisfactory service, and because they can not afford to employ any but the best when the success of a business of $20,000 to $100,000 depends so largely upon the skill of the buttermaker. The changing conditions in dairy and creamery practice will certainly result in bringing both businesses to a stable and satisfactory and successful and profitable basis.

## SHOWING AVERAGE MONTHLY PRICE OF FANCY WESTERN CREAMERY BUTTER IN NEW YORK MARKET.

| Month. | Twelve months ending Nov. 1, 1896. | Twelve months ending Nov. 1, 1897. | Twelve months ending Nov. 1, 1898. | Twelve months ending Nov. 1, 1899. | Twelve months ending Nov. 1, 1900. | Twelve months ending Nov. 1, 1901. | Twelve months ending Nov. 1, 1902. | Twelve months ending Nov. 1, 1903. | Twelve months ending Nov. 1, 1904. |
|---|---|---|---|---|---|---|---|---|---|
| November | $ .2330 | $ .2112 | $ .2325 | $ .2337 | $ .2600 | $ .2487 | $ .2412 | $ .2650 | $ .23.17 |
| December | .2500 | .2250 | .2290 | .2160 | .2720 | .2540 | .2510 | .2920 | .24.23 |
| January | .2266 | .1900 | .2040 | .1975 | .2650 | .2262 | .2425 | .2762 | .22.70 |
| February | .2000 | .2050 | .2042 | .2100 | .2500 | .2250 | .2862 | .2600 | .25.17 |
| March | .2185 | .1900 | .1937 | .2075 | .2550 | .2212 | .2840 | .2860 | .24.52 |
| April | .1650 | .1880 | .1980 | .1962 | .1960 | .2099 | .2825 | .2725 | .22.84 |
| May | .1572 | .1530 | .1580 | .1790 | .2012 | .1900 | .2275 | .2200 | .20.12 |
| June | .1550 | .1500 | .1687 | .1881 | .1950 | .1925 | .2195 | .2160 | .18.03 |
| July | .1505 | .1500 | .1687 | .1835 | .1960 | .1960 | .2131 | .2012 | .17.67 |
| August | .1571 | .1675 | .1860 | .2000 | .2100 | .2050 | .1990 | .1940 | .17.93 |
| September | .1600 | .1930 | .2025 | .2262 | .2150 | .2110 | .2170 | .2075 | .19.47 |
| October | .1850 | .2290 | .2235 | .2400 | .2190 | .2200 | .2362 | .2100 | .20.95 |
| Average value per lb. for each year | $ .1882 | $ .1885 | $ .1971 | $ .2065 | $ .2278 | $ .2165 | $ .2416 | $ .2417 | $ .21.40 |

The increase in size of our creameries is shown by the following figures, taken from the foregoing tables:

| | 1900. | 1901. | 1902. | 1903. | 1904. |
|---|---|---|---|---|---|
| Average pounds of butter per creamery.. | 104,918 | 105,491 | 104,152 | 97,770 | 112,084 |
| Total pounds of butter for all creameries. | 84,965,062 | 82,704,944 | 77,885,696 | 64,565,970 | 66,017,476 |

The figures in the above comparison for the year 1904 are exclusive of nine centralizing plants, which make 5,400,000 pounds of butter, including them, the average amount of butter made in each creamery is 120,586 pounds.

The estimated gross amount of butter, 66,017,476 pounds, includes all the creamery butter made in the State in plants of all kinds.

## COST OF MAKING POUND OF BUTTER.

The reports of this office show that the cost of making butter in the various creameries of the State are as follows:

| | | | |
|---|---|---|---|
| Creamery making | 40,000 lbs. | cost of making is | 4. cents. |
| Creamery making | 50,000 lbs. | cost of making is | 3.4 cents. |
| Creamery making | 60,000 lbs. | cost of making is | 3. cents. |
| Creamery making | 70,000 lbs. | cost of making is | 2.88 cents. |
| Creamery making | 80,000 lbs. | cost of making is | 2.66 cents. |
| Creamery making | 90,000 to 125,000lbs. | cost of making is | 2. cents. |
| Creamery making | 150,000 lbs. | cost of making is | 1.85 cents. |
| Creamery making | 175,000 lbs. | cost of making is | 1.65 cents. |
| Creamery making | 200,000 and above | cost of making is | 1.44 cents. |

It is evident from these figures that the smaller creamery can not long exist where there is competition of any kind. The possibility of making butter for a cent and a half a pound makes the continued existence of a creamery whose expense is three or four cents a pound, impossible. The tendency is, and must be, under present conditions, toward increase in size of our creameries and we must look, in the future, for larger creameries and, naturally, not so many of them.

## TABLE No. 3.

The dairy commissioner very greatly regrets that it is impracticable to get an absolutely perfect report of the butter made in the State. The many changes in the management of creameries makes it impossible in some cases for the report to be given. It has been the policy of this department to secure as complete a report as possible and then to assume that the creameries that do report make up a fair average for all the creameries of the State. The following table will show the very great increase in the amount of butter made from cream, as well as an increase in the amount of butter made by each creamery, all of which, of course, was to be expected. The rapid growth of the use of the hand separator and the tendency towards concentration in the creamery business are both well known. About forty per cent of our butter is made from cream, mostly of the hand separator variety; the remainder is still made from whole milk.

As shown by previous reports of this office, and by the succeeding table as well, about ten per cent of the creamery butter is consumed in the State, and more than half of this amount by the patrons of the creameries themselves.

# TABLE No. 3.

TABLE SHOWING NUMBER OF POUNDS OF MILK RECEIVED, NUMBER OF POUNDS OF CREAM RECEIVED, POUNDS OF BUTTER MADE, AMOUNT PAID TO PATRONS FOR MILK AND CREAM, POUNDS SOLD TO PATRONS IN IOWA AND SHIPPED OUTSIDE THE STATE, SO FAR AS REPORTED BY THE CREAMERIES.

| Counties. | Number reporting. | Pounds of milk received. | Pounds of cream received. | Pounds of Butter Made, its Value and Market for Same. | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Pounds of butter made. | Amount paid to patrons for milk and cream. | Pound sold to patrons. | Pounds sold in Iowa. | Pounds shipped out of the State. |
| THE STATE. | 516 | 775,087,330 | 84,028,976 | 62,222,457 | $9,884,543 | 3,437,505 | 2,834,192 | 54,650,760 |
| Adair. | 8 | 10,013,172 | 429,320 | 627,518 | 130,445 | 27,212 | 15,986 | 584,320 |
| Adams | .... | .... | .... | .... | .... | .... | .... | .... |
| Allamakee | 6 | 4,509,970 | 4,039,746 | 1,225,611 | 206,820 | 37,101 | 16,586 | 1,171,924 |
| Appanoose | .... | .... | .... | .... | .... | .... | .... | .... |
| Audubon | 9 | 17,044,387 | 828,437 | 1,053,550 | 157,626 | 88,193 | 8,747 | 1,433,610 |
| Benton | 1 | 58,819 | 90,088 | 60,093 | 3,883 | 2,037 | 7,247 | 20,809 |
| Black Hawk | 15 | 30,323,847 | 1,994,373 | 1,865,492 | 325,368 | 134,071 | 356,044 | 1,375,377 |
| Boone | 2 | 4,522,724 | 12,133 | 203,259 | 34,229 | 10,798 | 20,018 | 172,443 |
| Bremer | 19 | 47,152,141 | .... | 2,107,648 | 310,007 | 196,654 | 28,562 | 1,882,432 |
| Buchanan | 9 | 32,384,378 | 1,338,047 | 1,867,233 | 325,506 | 154,823 | 26,888 | 1,785,522 |
| Buena Vista | 3 | 1,981,204 | 1,071,222 | 339,078 | 54,054 | 16,956 | 6,500 | 315,622 |
| Butler | 15 | 32,163,000 | 1,053,121 | 1,508,785 | 210,458 | 124,765 | 52,656 | 1,331,364 |
| Calhoun | 5 | 2,906,626 | 617,189 | 782,736 | 43,471 | 6,666 | 3,743 | 772,327 |
| Carroll | 8 | 5,517,143 | 1,484,859 | 794,711 | 117,826 | 45,536 | 19,800 | 729,375 |
| Cass | 2 | 1,823,928 | 40,900 | 84,657 | 12,587 | 3,988 | .... | 80,669 |
| Cedar | 5 | 4,329,431 | 457,438 | 313,564 | 47,588 | 8,162 | 30,005 | 275,897 |
| Cerro Gordo | 4 | .... | 1,700,211 | 436,381 | 76,866 | 10,782 | 39,964 | 385,635 |
| Cherokee | 3 | .... | 1,038,480 | 278,334 | 49,085 | 3,536 | 19,486 | 255,312 |
| Chickasaw | 16 | 29,651,308 | 4,952,951 | 2,549,243 | 431,258 | 189,239 | 61,232 | 2,298,772 |
| Clarke | .... | .... | .... | .... | .... | .... | .... | .... |
| Clay | 6 | 6,038,260 | 238,525 | 365,462 | 64,254 | 70,592 | 17 | 294,853 |
| Clayton | 17 | 25,250,839 | 6,923,606 | 2,974,656 | 407,427 | 80,841 | 45,358 | 2,848,457 |
| Clinton | 8 | 10,302,629 | 310,315 | 549,168 | 73,040 | 13,336 | 21,763 | 514,069 |
| Crawford | 2 | .... | 2,890,347 | 768,544 | 109,620 | 1,117 | .... | 767,427 |
| Dallas | 3 | 3,966,626 | 238,490 | 294,694 | 45,552 | 6,145 | 45,696 | 242,853 |
| Davis | .... | .... | .... | .... | .... | .... | .... | .... |
| Decatur | 1 | .... | 360,000 | 120,000 | 20,000 | 2,000 | 118,000 | .... |
| Delaware | 20 | 59,030,588 | 413,513 | 2,719,790 | 470,808 | 227,640 | 86,124 | 2,405,236 |
| Des Moines | .... | .... | .... | .... | .... | .... | .... | .... |
| Dickinson | 3 | 3,470,315 | 117,551 | 202,070 | 19,669 | 17,797 | 1,114 | 183,159 |
| Dubuque | 19 | 30,362,054 | 171,356 | 1,467,054 | 246,689 | 83,501 | 40,246 | 1,352,307 |
| Emmet | 8 | 7,751,558 | 362,826 | 437,220 | 49,493 | 36,801 | 2,346 | 398,073 |
| Fayette | 17 | 49,301,212 | 984,458 | 2,507,727 | 421,025 | 206,833 | 56,703 | 2,244,141 |
| Floyd | 3 | .... | 1,980,000 | 501,214 | 93,796 | 29,899 | 1,500 | 469,815 |
| Franklin | 7 | 9,669,777 | 1,351,581 | 609,193 | 105,794 | 37,002 | 939 | 571,252 |
| Fremont | .... | .... | .... | .... | .... | .... | .... | .... |
| Greene | 1 | 1,231,460 | 8,460 | 60,000 | 10,000 | 1,050 | 3,260 | 55,690 |
| Grundy | 7 | 14,133,480 | 708,816 | 754,947 | 110,529 | 72,314 | 4,062 | 678,571 |
| Guthrie | 7 | 12,075,464 | 556,645 | 727,043 | 122,392 | 35,665 | 33,581 | 657,797 |
| Hamilton | 6 | 13,406,577 | 151,520 | 642,260 | 105,986 | 132,126 | 3,451 | 506,683 |

| Counties. | Number reporting. | Pounds of milk received. | Pounds of cream received. | Pounds of Butter Made, its Value and Market for Same. | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Pounds of butter made. | Amount paid to patrons for milk and cream. | Pounds sold to patrons. | Pound sold in Iowa. | Pounds shipped out of the State. |
| Hancock | 8 | 4,446,193 | 1,186,203 | 542,542 | $ 82,400 | 18,109 | 3,211 | 521,222 |
| Hardin | 11 | 17,708,819 | 1,079,833 | 791.990 | 164,800 | 81,867 | 32,970 | 677,153 |
| Harrison | 2 | 1,937,885 | 34,516 | 96,565 | 16,342 | 7,426 | 35,636 | 53,503 |
| Henry | ... | ........... | ........... | ........... | ........... | ........ | ......... | ......... |
| Howard | 9 | 11,829,686 | 2,400,000 | 1,013,560 | 167,063 | 26,247 | 1,821 | 985,492 |
| Humboldt | 11 | 10,000,273 | 1,111,981 | 754,800 | 104,545 | 48,237 | 669 | 705,894 |
| Ida | 2 | 480,000 | 568,000 | 216,333 | 35,241 | 6,240 | ........ | 200,093 |
| Iowa | 6 | 10,315,957 | 201,393 | 594,164 | 88,634 | 126,788 | 25,851 | 441,525 |
| Jackson | 12 | 19,311,412 | 1,553,716 | 1,286,345 | 205,043 | 18,401 | 3,875 | 1,264,069 |
| Jasper | 2 | 4,049,747 | 20,000 | 182,971 | 29,030 | 11,394 | 5,592 | 165,985 |
| Jefferson | 3 | 2,347,148 | 296,956 | 280,237 | 32,710 | 10,677 | 12,000 | 257,560 |
| Johnson | .... | ...... | .......... | ........... | ........ | ......... | ......... | ......... |
| Jones | 13 | 43,286,994 | 1,570,940 | 2,655,799 | 410,701 | 103,761 | 86,165 | 1,465,873 |
| Keokuk | . | ...... | .......... | .......... | .......... | .. | ......... | ......... |
| Kossuth | 21 | 32,070,908 | 1,037,548 | 1,698,905 | 282,917 | 155,986 | 23,384 | 1,519,535 |
| Lee | ... | ...... | ........... | ........... | .......... | ......... | ......... | ......... |
| Linn | 14 | 18,991,427 | 600,464 | 1,030,937 | 171,050 | 51,979 | 238,558 | 740,400 |
| Louisa | .. | ........... | ......... | ........... | ........ | ......... | .... | ......... |
| Lucas | .... | ........... | ........... | ........ | .......... | ........ | ......... | ...... |
| Lyon | 2 | 1,143,524 | 491,689 | 178,065 | 31,451 | 5,400 | 1,500 | 171,165 |
| Madison | .... | .......... | .......... | ...... | .......... | ......... | ......... | ...... |
| Mahaska | 1 | ........... | 400,000 | 100,000 | 17,500 | 6,000 | ......... | 94,000 |
| Marion | .... | ........... | ....... | .......... | ....... | ........ | ...... | ......... |
| Marshall | 4 | 2,144,155 | 1,679,000 | 494,915 | 90,423 | 10,916 | 32,488 | 451,511 |
| Mills | .... | .......... | ........... | ........... | ....... | ......... | .... | ......... |
| Mitchell | 8 | 440,000 | 1,425,936 | 1,425,936 | 229,892 | 50,255 | 43,573 | 1,332,108 |
| Monona | 1 | 58,000 | 81,562 | 25,800 | 3,914 | 396 | 1,491 | 23,913 |
| Monroe | 1 | 1,597,523 | 40,400 | 76,329 | 13,256 | 2,691 | 1,219 | 72,419 |
| Montgomery | .... | ........... | ........... | ........... | .......... | ......... | ......... | ....... |
| Muscatine | 1 | 451 | 451,960 | 112,960 | 12,970 | 540 | 30,650 | 81,770 |
| O'Brien | 5 | 3,972,640 | 1,258,000 | 513,476 | 86,133 | 19,933 | 3,736 | 489,807 |
| Osceola | 1 | 1,300,000 | 181,552 | 118,760 | 9,187 | 1,800 | .... | ...... |
| Page | 1 | ........... | 2,000,000 | 588,000 | 117,600 | ......... | 67,000 | 521,000 |
| Palo Alto | 13 | 29,505,473 | 167,328 | 1,414,671 | 227,277 | 137,856 | 46,680 | 1,230,135 |
| Plymouth | 4 | 5,546,449 | 237,084 | 302,311 | 54,939 | 18,512 | 9,800 | 273,999 |
| Pocahontas | 4 | 960,000 | 306,160 | 78,280 | 20,390 | 3,686 | 1,000 | 74,594 |
| Polk | 4 | 226,232 | 3,032,193 | 875,109 | 148,440 | 6,326 | 202,185 | 666,698 |
| Pottawattamie | 5 | 609,256 | 668,561 | 307,131 | 51,719 | 2,926 | 230,502 | 73,703 |
| Poweshiek | 4 | 2,960,386 | 1,116,982 | 383,592 | 63,624 | 2,580 | 2,580 | 378,432 |
| Ringgold | . | ........... | ......... | ........ | ....... | ......... | ........ | ......... |
| Sac | 8 | 2,827,000 | 1,453,500 | 553,964 | 102,439 | 20,933 | 171,000 | 362,031 |
| Scott | .... | ........... | ....... | ..... | ...... | ......... | ...... | ......... |
| Shelby | 8 | 6,578,540 | 1,270,909 | 637,946 | 98,822 | 36,743 | 10,858 | 590,345 |
| Sioux | 5 | 264,331 | 2,425,242 | 920,446 | 159,055 | 15,860 | 7,734 | 896,852 |
| Story | 8 | 16,503 104 | 350,460 | 807,296 | 144,660 | 87,594 | 15,451 | 704,251 |
| Tama | 3 | 2,423,958 | 93.064 | 208,640 | 38,601 | 1,086 | 1,000 | 206,554 |
| Taylor | 2 | ........ | 3,050,000 | 724,897 | 111,715 | 1,000 | 3,700 | 720,197 |
| Union | 1 | 689,052 | 102,160 | 54,512 | 9,512 | 2,219 | 854 | 52,293 |
| Van Buren | . | ........... | ........... | ...... | ....... | ........... | ......... | ......... |
| Wapello | 1 | 1,010,000 | 7,025 | 47,500 | 8,048 | 2,100 | 30,859 | 14,541 |
| Warren | 2 | 1,200,000 | ..... | 53,732 | 9,678 | 2,850 | 15,882 | 35,700 |
| Washington | 2 | ........... | 432,000 | 107,611 | 16,776 | 120 | 15,000 | 92,491 |
| Wayne | 1 | 6,187,577 | 200,000 | 336,878 | 60,000 | 2.200 | 1,200 | 333,478 |
| Webster | 2 | 352,725 | 375,000 | 100,333 | 15,463 | 4,224 | 6,000 | 90,109 |
| Winnebago | 8 | 19,158,014 | 1,214,885 | 925.010 | 147,402 | 103,885 | 30,053 | 791,072 |
| Winneshiek | 12 | 7,350,000 | 1,920,015 | 1,920,015 | 316,209 | 16,542 | 18,514 | 1,866,959 |
| Woodbury | 2 | ........... | 4,740,000 | 2,715,690 | 453,878 | 600 | 150,000 | 2,565,090 |
| Worth | 9 | 12,761,618 | 754,591 | 1,498,503 | 133,012 | 59,227 | 2,203 | 1,437,073 |
| Wright | 6 | 1,167,956 | 1,523,644 | 460,066 | 76,961 | 28,215 | 12,237 | 419,614 |
| THE STATE | 516 | 775.087,330 | 84.028.976 | 62.222,457 | $9,884,543 | 3.437,505 | 2.834,192 | 54,650,760 |

# RAILWAY BUTTER SHIPMENTS.

The following tables are made up from the statistics furnished by all the railroads of the State showing the amount of butter shipped from points in Iowa to points outside the State. Little or no butter is imported into the State in any form and the figures in the following tables practically represent the surplus production of the State. It is estimated that about 65,000,000 pounds of butter are made and consumed in the State, so that the total production is about 140,000,000 pounds, having an aggregate value of $28,000,000.

In the following tables the numbers showing pounds of butter shipped from each county must not be understood as representing the amount of butter produced in the respective counties. For instance, the counties highest on the list—Woodbury, Polk and Lee—are not large producers of butter. Woodbury and Polk counties contain centralized creameries making large quantities of butter, and all of these counties have process butter factories making large quantities of butter, but none of them are the source of any great proportion of the butter which is manufactured and shipped in the county. The same thing is true, in less degree, in regard to other counties.

## TABLE SHOWING NUMBER OF CREAMERIES—GROSS POUNDS OF BUTTER SHIPPED OUT OF STATE.

| Counties. | Number of Creameries for 1903 and 1804. | | Gross Pounds of Butter Shipped Out of the State for the Years Ending September 30, 1903 and 1904. Showing Increase and Decrease by Counties. | | | |
|---|---|---|---|---|---|---|
| | 1903 | 1904 | 1903 | 1904 | Increase. | Decrease. |
| THE STATE | 702 | 691 | 93,761,661 | 90,344,358 | ........... | 3,417,303 |
| Adair | 13 | 11 | 592,912 | 771,124 | 178,212 | ........ |
| Adams | 3 | 6 | 171,643 | 61,810 | ........... | 109,833 |
| Allamakee | 7 | 7 | 1,489,747 | 1,460,583 | ........... | 29,164 |
| Appanoosa | .... | ..... | 113,367 | 71,199 | ..... | 42,168 |
| Audubon | 11 | 9 | 990,537 | 1,070,759 | 80,222 | ......... |
| Benton | 10 | 4 | 797,321 | 503,516 | ........... | 293,805 |
| Black Hawk | 17 | 16 | 1,494,874 | 1,292,165 | ........... | 202,709 |
| Boone | 4 | 3 | 71,617 | 85,359 | 13,742 | ......... |
| Bremer | 21 | 21 | 2,496,880 | 2,511,439 | 14,559 | ......... |
| Buchanan | 17 | 14 | 2,442,670 | 2,155,332 | ........... | 287,338 |
| Buena Vista | 7 | 4 | 1,094,595 | 1,004,419 | ........... | 90,176 |
| Butler | 20 | 19 | 1,827,671 | 1,880,634 | 52,963 | ...... |
| Calhoun | 8 | 7 | 1,574,950 | 1,208,779 | ........... | 366,171 |
| Carroll | 12 | 9 | 1,520,613 | 1,515,303 | ......... | 5,310 |
| Cass | 7 | 3 | 226,102 | 86,541 | ........... | 139,561 |
| Cedar | 9 | 9 | 418,508 | 446,422 | 27,914 | ......... |
| Cerro Gordo | 7 | 7 | 645,449 | 976,595 | 331,147 | ......... |
| Cherokee | 4 | 4 | 171,463 | 216,275 | 44,812 | ......... |
| Chickasaw | 18 | 18 | 2,619,271 | 2,289,708 | ........... | 329,563 |
| Clarke | ...... | ..... | 18,755 | 10.855 | ........... | 7,900 |
| Clay | 8 | 6 | 614,318 | 814,490 | 200,172 | ......... |
| Clayton | 18 | 20 | 3,916,094 | 3,206,473 | .......... | 709,621 |
| Clinton | 15 | 12 | 660,676 | 1,077,206 | 416,530 | ......... |
| Crawford | 3 | 2 | 958,798 | 1,041,830 | 83,032 | ......... |
| Dallas | 8 | 9 | 731,682 | 475,697 | ........... | 255,985 |
| Davis | 4 | 5 | 47,157 | 100 | ........... | 47,057 |
| Decatur | 5 | 5 | 125,640 | 117,828 | ........... | 7,812 |
| Delaware | 26 | 26 | 2,967,206 | 2,406,235 | ........ | 560,971 |
| Des Moines | ...... | .... | 301,670 | 317,520 | 15,850 | ......... |
| Dickinson | 4 | 4 | 1,201,551 | 649,881 | ........... | 551,670 |
| Dubuque | 23 | 22 | 2,738,755 | 2,710,439 | ........... | 28,316 |
| Emmet | 8 | 8 | 854,436 | 539,439 | ........... | 314,997 |
| Fayette | 19 | 18 | 2,494,653 | 2,408,110 | ........... | 86,543 |
| Floyd | 6 | 5 | 924,558 | 951,574 | 27,016 | ......... |
| Franklin | 10 | 10 | 372,920 | 538,959 | 166,039 | ......... |
| Fremont | ... | ...... | 3,868 | 181,421 | 177,553 | ....... |
| Greene | 4 | 2 | 230,652 | 187,688 | ...... | 42,964 |
| Grundy | 10 | 6 | 703,698 | 737,897 | 34,199 | ......... |
| Guthrie | 15 | 11 | 1,180,018 | 1,000.443 | ........... | 179,575 |
| Hamilton | 13 | 9 | 1,654,582 | 1,379,654 | ........... | 274,928 |
| Hancock | 12 | 10 | 461,156 | 599,880 | 138,724 | ......... |
| Hardin | 16 | 14 | 1,629,760 | 1,644,631 | 14,871 | ......... |
| Harrison | 2 | 2 | 340,375 | 337,619 | ........... | 2,756 |
| Henry | 1 | ...... | 84,423 | 63,785 | ........... | 20,638 |
| Howard | 9 | 9 | 1,360,360 | 1,199,978 | ........... | 160,382 |
| Humboldt | 11 | 11 | 794,480 | 866,333 | 71,853 | ......... |
| Ida | 2 | 2 | 214,290 | 229,485 | 15,195 | ......... |
| Iowa | 10 | 9 | 693,389 | 738,859 | 45,470 | ......... |
| Jackson | 16 | 16 | 1,408,303 | 1,666,353 | 258,050 | ....... |
| Jasper | 6 | 3 | 297,360 | 275,000 | ........... | 22,360 |

TABLE SHOWING NUMBER OF CREAMERIES—GROSS POUNDS OF BUTTER SHIPPED OUT OF THE STATE—CONTINUED.

| Counties. | Number of Creameries for 1903 and 1904. | | Gross Pounds of Butter Shipped Out of the State for the Years Ending September 30, 1903 and 1904, Showing Increase and Decrease by Counties. | | | |
|---|---|---|---|---|---|---|
| | 1903 | 1904 | 1903 | 1904 | Increase. | Decrease. |
| Jefferson | 4 | 4 | 110, 752 | 116, 792 | 6, 040 | ...... |
| Johnson | 2 | 1 | 124, 706 | 323, 419 | 198, 713 | ..... |
| Jones | 25 | 23 | 3, 926, 063 | 3, 393, 621 | ...... | 532, 442 |
| Keokuk | 3 | 3 | 438, 281 | 141, 082 | ............ | 297, 199 |
| Kossuth | 22 | 21 | 1, 782, 170 | 1, 852, 354 | 70, 184 | .......... |
| Lee | ...... | .... | 2, 234, 006 | 2, 980, 166 | 746, 160 | .......... |
| Linn | 22 | 21 | 1, 507, 483 | 1, 626, 547 | 119, 064 | .... |
| Louisa | 1 | ... | 51, 449 | 21, 184 | ............ | 30, 265 |
| Lucas | 2 | 1 | ........ | 99, 711 | 99, 711 | .......... |
| Lyon | 5 | 2 | 234, 374 | 264, 058 | 29, 684 | .......... |
| Madison | ...... | 1 | 25, 668 | 25, 696 | 28 | .......... |
| Mahaska | 2 | 1 | 692, 563 | 115, 780 | ............ | 576, 783 |
| Marion | 3 | 2 | 67, 550 | 101, 285 | 33, 735 | ......... |
| Marshall | 6 | 4 | 526, 492 | 633, 609 | 107, 117 | .... |
| Mills | 3 | 3 | 14, 961 | 3, 835 | ............ | 11, 126 |
| Mitchell | 10 | 10 | 1, 577, 956 | 1, 405, 516 | ............ | 172, 440 |
| Monona | 1 | 1 | 60, 795 | 72, 921 | 12, 126 | .......... |
| Monroe | 1 | 1 | 58, 667 | 38, 850 | ...... | 19, 817 |
| Montgomery | 1 | ...... | 149, 658 | 72, 231 | ............ | 77, 427 |
| Muscatine | 2 | 2 | 123, 118 | 62, 993 | ............ | 60, 225 |
| O'Brien | 5 | 5 | 678, 065 | 837, 220 | 159, 155 | .......... |
| Osceola | 3 | 2 | 305, 169 | 475, 045 | 169, 876 | .......... |
| Page | 3 | 1 | 2, 103, 922 | 720, 735 | ............ | 1, 383, 187 |
| Palo Alto | 15 | 15 | 1, 524, 245 | 1, 230, 836 | .... | 293, 409 |
| Plymouth | 6 | 5 | 464, 980 | 583, 031 | 118, 051 | .......... |
| Pocahontas | 8 | 6 | 644, 998 | 456, 821 | ......... | 188, 177 |
| Polk | 5 | 7 | 3, 224, 270 | 4, 012, 752 | 788, 482 | .......... |
| Pottawattamie | 8 | 8 | 324, 894 | 353, 347 | 28, 453 | .......... |
| Poweshiek | 7 | 6 | 407, 818 | 1, 012, 113 | 604, 295 | ..... |
| Ringgold | 2 | ..... | 12, 307 | ............ | ............ | 12, 307 |
| Sac | 11 | 8 | 699, 777 | 701, 012 | 1, 235 | .......... |
| Scott | 2 | 2 | 326, 831 | 306, 443 | ........ | 20, 388 |
| Shelby | 10 | 9 | 231, 351 | 513, 208 | 281, 857 | ....... |
| Sioux | 6 | 6 | 944, 706 | 1, 194, 390 | 249, 684 | .......... |
| Story | 14 | 11 | 1, 388, 206 | 1, 064, 669 | ............ | 323, 537 |
| Tama | 5 | 4 | 545, 905 | 687, 049 | 141, 144 | .......... |
| Taylor | 2 | 2 | 518, 096 | 980, 027 | 461, 931 | .......... |
| Union | 9 | 2 | 638, 011 | 581, 482 | ............ | 56, 529 |
| Van Buren | 3 | 3 | 86, 813 | 6, 620 | ............ | 90, 193 |
| Wapello | 3 | 2 | 137, 107 | 93, 950 | ............ | 43, 157 |
| Warren | 3 | 2 | ............ | 260 | 260 | .......... |
| Washington | 5 | 2 | 403, 126 | 260, 979 | ........... | 142, 147 |
| Wayne | 4 | 3 | 794, 455 | 957, 156 | 162, 701 | ......... |
| Webster | 5 | 3 | 659, 325 | 715, 596 | 56, 271 | .......... |
| Winnebago | 6 | 5 | 1, 105, 416 | 1, 177, 069 | 71, 653 | .......... |
| Winneshiek | 7 | 15 | 2, 156, 992 | 1, 931, 392 | ........... | 225, 600 |
| Woodbury | 2 | 2 | 7, 320, 139 | 6, 283, 588 | ............ | 1, 036, 551 |
| Worth | 12 | 11 | 861, 036 | 844, 902 | ...... | 16, 134 |
| Wright | 7 | 6 | 791, 216 | 1, 027, 392 | 236, 176 | ....... |
| THE STATE. | 792 | 691 | 93, 761, 661 | 90, 344, 358 | ............ | 3, 417, 303 |

# NET BUTTER SHIPMENT BY COUNTIES AND RANK—AREA OF COUNTIES.

Showing pounds of butter shipped per square mile and rank of counties; also total net butter shipments for the State and net pounds per square mile, for the year ending September 30, 1904.

| Counties. | Total net shipments of butter for the year. | Rank by total lbs. shipped. | Area of square miles in counties. | Pounds per square mile. | Rank by lbs. per square mile. |
|---|---|---|---|---|---|
| THE STATE | 75,889,260 | ...... | 55,475 | 1,385 | ...... |
| Adair | 647,744 | 44 | 576 | 1,124 | 49 |
| Adams | 51,920 | 90 | 432 | 120 | 87 |
| Allamakee | 1,227,289 | 19 | 615 | 1,995 | 24 |
| Appanoose | 59,807 | 87 | 500 | 119 | 88 |
| Audubon | 899,438 | 29 | 432 | 2,082 | 22 |
| Benton | 422,953 | 59 | 720 | 587 | 65 |
| Black Hawk | 1,086,418 | 22 | 576 | 1,886 | 25 |
| Boone | 67,501 | 84 | 576 | 117 | 89 |
| Bremer | 2,109,607 | 7 | 432 | 4,767 | 5 |
| Buchanan | 1,810,479 | 11 | 576 | 3,149 | 10 |
| Buena Vista | 843,712 | 34 | 576 | 1,464 | 37 |
| Butler | 1,579,733 | 13 | 576 | 2,742 | 13 |
| Calhoun | 1,015,375 | 24 | 576 | 1,762 | 27 |
| Carroll | 1,272,854 | 18 | 576 | 2,209 | 21 |
| Cass | 72,695 | 83 | 576 | 126 | 84 |
| Cedar | 374,984 | 63 | 576 | 649 | 63 |
| Cerro Gordo | 820,550 | 37 | 576 | 1,424 | 39 |
| Cherokee | 181,671 | 73 | 576 | 315 | 74 |
| Chickasaw | 1,922,304 | 10 | 504 | 8,814 | 6 |
| Clarke | 9,118 | 94 | 432 | 21 | 94 |
| Clay | 688,174 | 43 | 576 | 1,194 | 46 |
| Clayton | 2,693,436 | 4 | 745 | 3,615 | 8 |
| Clinton | 904,853 | 28 | 680 | 1,330 | 41 |
| Crawford | 895,137 | 30 | 720 | 1,243 | 43 |
| Dallas | 399,585 | 60 | 576 | 693 | 60 |
| Davis | 84 | 98 | 500 | ...... | 98 |
| Decatur | 98,975 | 77 | 534 | 110 | 90 |
| Delaware | 2,021,238 | 9 | 576 | 3,509 | 9 |
| Des Moines | 266,716 | 67 | 400 | 667 | 62 |
| Dickinson | 545,900 | 51 | 408 | 1,338 | 40 |
| Dubuque | 2,276,778 | 6 | 604 | 3,769 | 7 |
| Emmet | 453,128 | 56 | 408 | 1,112 | 50 |
| Fayette | 2,022,812 | 8 | 720 | 2,809 | 11 |
| Floyd | 799,322 | 39 | 504 | 1,502 | 34 |
| Franklin | 451,735 | 57 | 576 | 784 | 57 |
| Fremont | 152,493 | 75 | 514 | 297 | 75 |
| Greene | 157,657 | 74 | 570 | 2,766 | 12 |
| Grundy | 619,833 | 45 | 504 | 1,229 | 44 |
| Guthrie | 840,372 | 35 | 576 | 1,459 | 38 |
| Hamilton | 1,158,909 | 21 | 576 | 2,011 | 23 |
| Hancock | 461,899 | 55 | 576 | 802 | 56 |
| Hardin | 1,381,490 | 16 | 576 | 2,398 | 15 |
| Harrison | 283,599 | 65 | 684 | 414 | 69 |
| Henry | 53,579 | 88 | 432 | 124 | 85 |
| Howard | 1,007,981 | 25 | 460 | 2,191 | 19 |

## NET BUTTER SHIPMENTS BY COUNTIES AND RANK—AREA OF COUNTIES—Con.

| Counties. | Total net shipments of butter for the year. | Rank by total lbs. shipped. | Area of square miles in counties. | Pounds per square mile. | Rank by lbs. per square mile. |
|---|---|---|---|---|---|
| Humboldt | 727,719 | 40 | 432 | 1,687 | 29 |
| Ida | 192,767 | 72 | 432 | 446 | 68 |
| Iowa | 610,641 | 46 | 576 | 1,060 | 51 |
| Jackson | 1,399,736 | 15 | 619 | 2,099 | 21 |
| Jasper | 231,000 | 69 | 720 | 321 | 73 |
| Jefferson | 98,105 | 77 | 432 | 269 | 76 |
| Johnson | 271,771 | 66 | 578 | 470 | 67 |
| Jones | 2,850,641 | 3 | 576 | 4,966 | 4 |
| Keokuk | 118,508 | 76 | 576 | 206 | 77 |
| Kossuth | 1,556,977 | 14 | 984 | 1,582 | 31 |
| Lee | 2,503,339 | 5 | 490 | 5,109 | 3 |
| Linn | 1,366,299 | 17 | 720 | 2,189 | 20 |
| Louisa | 17,794 | 93 | 396 | 45 | 92 |
| Lucas | 83,757 | 81 | 432 | 194 | 78 |
| Lyon | 221,808 | 70 | 600 | 369 | 71 |
| Madison | 21,584 | 92 | 576 | 37 | 93 |
| Mahaska | 97,255 | 79 | 576 | 169 | 80 |
| Marion | 85,079 | 80 | 576 | 147 | 81 |
| Marshall | 532,231 | 52 | 576 | 924 | 54 |
| Mills | 3,221 | 96 | 445 | 7 | 96 |
| Mitchell | 1,180,633 | 20 | 480 | 2,251 | 17 |
| Monona | 61,253 | 85 | 432 | 142 | 82 |
| Monroe | 32,634 | 91 | 432 | 75 | 91 |
| Montgomery | 60,674 | 86 | 432 | 141 | 83 |
| Muscatine | 52,914 | 89 | 435 | 121 | 86 |
| O'Brien | 703,269 | 42 | 576 | 1,221 | 45 |
| Osceola | 399,037 | 61 | 408 | 978 | 53 |
| Page | 605,417 | 47 | 528 | 1,146 | 47 |
| Palo Alto | 1,033,902 | 23 | 576 | 1,795 | 26 |
| Plymouth | 489,746 | 53 | 820 | 597 | 64 |
| Pocahontas | 383,729 | 62 | 576 | 666 | 61 |
| Polk | 3,271,425 | 2 | 576 | 5,679 | 2 |
| Pottawattamie | 296,811 | 64 | 876 | 338 | 72 |
| Poweshiek | 850,174 | 33 | 576 | 1,476 | 36 |
| Ringgold | ............ | 99 | 545 | ....... | 99 |
| Sac | 588,850 | 49 | 576 | 1,022 | 52 |
| Scott | 257,412 | 68 | 447 | 576 | 66 |
| Shelby | 431,094 | 53 | 576 | 748 | 57 |
| Sioux | 1,003,287 | 26 | 768 | 1,306 | 42 |
| Story | 894,321 | 31 | 576 | 1,553 | 31 |
| Tama | 577,121 | 50 | 720 | 710 | 59 |
| Taylor | 823,222 | 36 | 540 | 1,524 | 32 |
| Union | 488,402 | 54 | 436 | 1,130 | 48 |
| Van Buren | 5,560 | 95 | 502 | 11 | 95 |
| Wapello | 78,918 | 82 | 432 | 183 | 79 |
| Warren | 218 | 97 | 576 | ........ | 96 |
| Washington | 219,222 | 71 | 576 | 380 | 70 |
| Wayne | 803,990 | 38 | 528 | 1,521 | 33 |
| Webster | 601,100 | 48 | 720 | 836 | 55 |
| Winnebago | 988,737 | 27 | 408 | 2,424 | 14 |
| Winneshiek | 1,622,369 | 12 | 696 | 2,331 | 16 |
| Woodbury | 5,378,214 | 1 | 864 | 6,225 | 1 |
| Worth | 709,717 | 41 | 408 | 1,739 | 28 |
| Wright | 863,009 | 32 | 576 | 1,498 | 35 |
| THE STATE | 75,889,260 | ...... | 55,475 | 1,385 | ...... |

## TABLE SHOWING TOTAL NET BUTTER SHIPMENTS OF THE STATE FOR THE YEARS 1890 TO 1904, INCLUSIVE, FROM IOWA TO POINTS OUTSIDE THE STATE; ALSO INCREASE OR DECREASE AS COMPARED WITH THE YEAR PRECEDING.

| Year Ending October 1st. | Net pounds of butter shipped. | Increase over preceding year. | Decrease from preceding year. |
|---|---|---|---|
| 1890 | 71,255,796 | | |
| 1891 | 68,690,716 | | 2,565,080 |
| 1892 | 60,112,931 | | 8,577,785 |
| 1893 | 54,572,902 | | 5,540,029 |
| 1894 | 54,509,417 | | 63,485 |
| 1895 | 66,497,108 | 11,987,691 | |
| 1896 | 80,032,916 | 13,535,808 | |
| 1897 | 83,620,081 | 3,587,165 | |
| 1898 | 75,364,337 | | 6,255,744 |
| 1899 | 76,620,326 | | 744,011 |
| 1900 | 71,719,329 | | 4,910,997 |
| 1901 | 74,863,995 | 3,144,666 | |
| 1902 | 72,714,584 | | 2,149,411 |
| 1903 | 77,079,794 | 4,365,210 | |
| 1904 | 75,889,260 | | 1.190,534 |

Counties shipping more than 1,000,000 pounds, net, of butter in the year ending September 30, 1904:

| 1904. | Counties. | 1903. |
|---|---|---|
| 5,537,214 | Woodbury | 6,148,916 |
| 3,271,425 | Polk | 2,708,386 |
| 2,850,641 | Jones | 3,297,892 |
| 2,693,436 | Clayton | 2,889,518 |
| 2,503,339 | Lee | 1,876,565 |
| 2,276,779 | Dubuque | 2,300,554 |
| 2,109,607 | Bremer | 1,297,379 |
| 2,022,812 | Fayette | 2,095,508 |
| 2,021,238 | Delaware | 2,492,453 |
| 1,922,304 | Chickasaw | 2,200,187 |
| 1,810,479 | Buchanan | 1,251,842 |
| 1,622,369 | Winneshiek | 1,811,873 |
| 1,579,732 | Butler | 1,535,243 |
| 1,556,977 | Kossuth | 1,497,022 |
| 1,399,736 | Jackson | 1,182,974 |
| 1,381,490 | Hardin | 1,368,998 |
| 1,366,299 | Linn | 1,266,285 |
| 1,272,854 | Carroll | 1,277,314 |
| 1,227,289 | Allamakee | 1,251,386 |
| 1,180,633 | Mitchell | 1,325,483 |
| 1,158,909 | Hamilton | 1,389,848 |
| 1,086,418 | Black Hawk | 1,255,694 |
| 1,033,902 | Palo Alto | 1,280,365 |
| 1,015,375 | Calhoun | 1,322,958 |
| 1,007,981 | Howard | 1,142,702 |
| 1,003,287 | Sioux | 793,753 |
| 47,912,525 | Totals | 48,261,098 |

These twenty-six counties ship 60 per cent of the 75,889,260 net pounds of butter shipped from the State.

PURIT
BUTCHER'S STO

View of Grand Stand, "Dan Patch Day," Iowa State Fair, 1904.

# PART VI.

## PAPERS ON LIVE STOCK, AGRICULTURE AND MISCELLANEOUS TOPICS.

## LIVE STOCK.

### A REVIEW OF THE YEAR 1904

*Taken from the 1904 Report of the Union Stock Yards and Transit Company, Chicago.*

RECEIPTS AND VALUATION.

| Kind. | Number. | Valuation. |
|---|---|---|
| Cattle | 3,259,185 | $149,192,290 |
| Calves | 267,499 | 2,574,677 |
| Hogs | 7,238,746 | 79,626,206 |
| Sheep | 4,504,630 | 18,428,319 |
| Horses | 105,949 | 14,303,115 |
| Total | 15,376,009 | $264,124,60 |

286,873 Carloads.

Owing to the long series of strikes at the packing houses during the summer of 1904, the receipts of live stock at the Union Stock Yards for the year show a decrease of 173,301 cattle, 4,244 calves, 87,177 hogs and 78,130 sheep with a general decrease of 16,042 cars in the total receipts, being a loss of about five per cent as compared with 1903, and a gain of four per cent as compared with 1902. That the above decreases were do entirely to the strike is shown by the fact that on the horse market, which was not affected by the strike, there was an increase in receipts of 5,346 horses.

Another result of the two months packing house strike was a serious reduction in the general demand for meats, and a turning back on the ranges of a portion of the year's crop of cattle that would otherwise have been sent to market.

Naturally prices declined, especially on common grades and half-fat stock, and spoiled what might otherwise have been a prospeours year with increased market receipts and better returns to producers and dealers.

### CATTLE.

Choice cattle were in strong demand nearly all the year, and top prices rose from $5.85 in January to $7.30 and $7.65 in November and December, respectively. Short-fed and poorly bred cattle, on the other hand, sold relatively low, so that for the entire cattle market in a general way prices averaged about the same as in 1903. Native steers of 1200 to 1350 lbs. averages, and 1350 to 1500 lbs. averages, constituting the two leading classes of cattle on the market and possessing the greater weight and higher value per 100 pounds, sold for an average increase of about 20c per 100 pounds, so that notwithstanding the large proportion of thin, poorly bred and half-fat stock thrown on the market, the average valuation of cattle for the year shows about $1.00 per head increase. The falling off in the demand for meats above referred to, due mainly to sensational agitation during the strike, pertained more largely to the cheaper grades, and the cattle mostly affected by it were the thin, common classes having the lighter weight and smaller value per 100 pounds.

### THE EXPERIENCED FEEDERS' OPPORTUNITY.

While on the average the prices received by stockmen for cattle during the year were no lower than the corresponding average for 1903, yet corn cost more and so results were less satisfactory. For this reason many beginners and transient feeders of cattle have dropped out of the business, and this leaves the field to the experienced feeders to operate under more favorable conditions than have obtained at any time during the last five years. Prices for stockers and feeders are at the lowest ebb, top prices having dropped from $5.05 in June to $4.10 in September and $4.25 in December, while average prices have declined to $2.90 in December, the lowest point for many years. So many short-fed cattle having been thrown on the market during the past year and the reluctance of feeders to replace them in the feed lots leave a prospective shortage of finished cattle, and predictions of materially higher prices for such during the coming year are freely made by salesmen.

At no time in the history of the business has there been a better prospect of a steady demand for finished beef cattle of good breeding and quality. The export demand is strong at the close of the heaviest year's shipments since 1890. The demand for shipment to Eastern cities has been very active, and such shipments the largest on record. The total shipments of cattle from this market during the year numerated 1,326,322, or over forty per cent of the receipts, a total which has not been equaled since the refrigeration era was fairly established. There is now a higher degree of healthy competition among the buying interests on the Chicago cattle market than on any market in recent years, and offerings suited to the demands of the market find ready sale at remunerative prices. It is the unsuitable and ill-prepared consignments that disappoint sellers and buyers alike, for the latter has to meet the demands of his customers, and often experiences as much difficulty in finding an outlet for the product of unsuitable purchases as had the cattle salesmen to find a buyer for the live animals.

### DEMAND FOR "BABY BEEF."

One of the most notable features of the year has been the unprecedented demand for choice, well-bred, fat young cattle, called "baby beef," and at no time was there a dull spot during the whole season for this class of young cattle. Choice yearlings were in demand all the time and the best qualities sold up among the top notchers. There is no question but "baby beef" has come to stay, and it is as popular with consumers abroad as in this country.

The increased demand for improved qualities of cattle for the feed lots of the corn belt is apparent, and is re-establishing the prestige of Chicago as a feeder market. The old-time cattle feeding prestige of Illinois and nearby states is also thus being re-established, and the fertility of the soil, that vital element on which depends their prosperity and which was depleted by grain growing for market during the days of free grass range cattle competition, is thus being restored.

### A BRIGHT PROSPECT FOR GOOD CATTLE.

The coming year seems to hold out bright prospects for choice cattle. Prices for cattle of a good degree of quality the last half of this year must have been encouraging to the feeders, who, starting their work on a well bred class of cattle, finished them to a condition attractive to the buyers of good beef and export cattle at Chicago.

This seems to again urge upon the cattle producers not only of the farms, but of every range section of this country, the remarkable advantage of which they may avail themselves in their business, by increasing the use of pure-bred breeding stock in their herds.

Results of good breeding in live stock for the market have at no time been more marked than during the last two or three years, and they teach a lesson to the producer that he should not fail to heed the coming year.

### THE FARMERS' GOLDEN OPPORTUNITY.

It is an era of very low prices for high-class breeding stock, and the most favorable time that farmers and cattlemen have yet known to secure cattle of most excellent blood to stock their farms and improve their breeding herds. Prices for this pure-bred stock have now fallen too low to long continue at their present level. The misfortune of the owners of herds of pure-bred cattle that have been established at great expense, in having to accept low prices for their young stock, is the good fortune of the farmers if they avail themselves of the opportunity.

### CHOICE BLOOD IS ECONOMY OF FEED.

The introduction of choice blood of any standard beef breed into the cattle of any section means economy of feed and far better results in weight and quality of the beef productions of that section when ready for market. It is a process that permits marketing prime beef cattle a year, or even two years, earlier than the old-fashioned methods. It is a money making business proposition that no set of progressive farmers should fail to take advantage of at once. Every year that the use of inferior or ordinary breeding stock is continued is time, feed and money lost. The increased demand for high-bred stock will come, and with it prices must advance. The fortunate man will be he who clears his farm of inferior stock and establishes himself well with a herd of good blood at the favorable prices now prevailing.

An evidence of this advantage has been in the low prices of ordinary feeding cattle all over the country this year, while young cattle that have shown the breeding desired by feeders have been bought at very satisfactory prices to the producers. The successful ranchmen of the south and west have almost doubled their profits by the breeding up of their herds, as compared with a time fifteen to twenty years ago. It is possible for the farmer to do the same and the necessity for him to do it at once on his higher-priced land seems obvious.

### A FAVORABLE CATTLE FUTURE.

General conditions for the feeders who handle good cattle the coming year seem promising. The tremendously great corn crop and its excellent quality with prices continuing at a level that can not be regarded as cheap, are all in favor of the men who are producing good cattle and other classes of live stock as well.

Experienced feeders who have made the most striking successes of the business have frequently declared that the years of very low prices for corn have generally been far more disastrous for feeders than the years of very high prices for corn. The opportunity for feeders the coming year, therefore, seems a remarkably favorable one. Money is obtainable for safe enterprises at favorable rates, supplies of grain and roughage are abundant, and the price is neither too high nor too low. Good feeders have been available at reasonable cost, and the consumption of all classes of meats is increasing steadily enough to seem to demand increased productions of all classes of farm stock. The year is closing with an exceptionally favorable outlook for the farmers and stockmen who conduct their business in the progressive way that is demanded in this age of progression.

Altogether, the outlook for the coming year on the Chicago cattle market is favorable, especially for well-bred and well-fed consignments.

### HOGS.

Receipts of hogs for 1904 show a decrease in numbers, the shortage being 87,176 head or about 1¼ per cent, also a decrease of six pounds per head in average weight, as compared with 1903. The total decrease equals about 63,000,000 pounds of pork, or the equivalent of 285,000 hogs. The strike was responsible for the shortage in number, and scarcity of corn explains the shrinkage in weight.

The general average of hog values declined nearly $1.00 per hundred pounds during the year, the average price of all grades being about $5.00 as compared with $6.00 for 1903, and $6.85 for 1902, making a general average decline of approximately $1.85 per 100 pounds in two years, notwithstanding a decrease in receipts on this market both years. The decline of values occurred, of course, on all markets, notwithstanding the fact that the general supply of hogs at the six principal markets in 1903 was 655,000 head short of 1902, and the further fact that the combined receipts at these six markets for 1904 reveal a shortage of, in round numbers, 3,000,000 hogs during three years since 1901.

### NO OVERSUPPLY IN COUNTRY.

There is no reason to believe that an oversupply of hogs exists is the country. During the last two years, for the first time in its history, those engaged in the trade have generally overestimated the supply of hogs in growers' hands. The reasons for this conclusion are plain. The high prices of 1902 and the first half of 1903 caused not only the marketing of all hogs intended for market, but a large sacrifice of breeding stock in addition, including nearly all the heavy brood sows. In consequence, since that time breeding has been mostly from gilts or young sows, which means small litters of pigs, and these often ill-cared for and weak to stand the frequent cold and stormy spring weather. The annual crop of pigs has therefore been smaller to begin with. Corn has been scarce and high in price, and the temptation to hoard or sell instead of feed it has been strong, while the high summer and early fall prices for hogs induced owners to ship to market very closely. Moreover, the selling of many short-fed cattle carried hogs to market prematurely. Slaughterers are unanimous in their declaration that the country never before marketed a crop so lacking in maturity, this feature being especially notable during the final six months. All these considerations point inevitably to a moderate supply of hogs now in the country, and there is no good reason to expect materially lower prices.

### NEVER BEFORE SO HEALTHY.

Never before in the history of the industry have hogs been so healthy. Cholera is practically unheard of at the present time. This not only means freedom of the owner from losses on account of actual deaths, but also indicates a great improvement in the general health of the animals, and more profit in feeding them in consequence, besides greater safety to the public health. The present remarkable health of swine is due to economy in feeding corn, the increased use of green food as a partial substitute, and more exercise, sunshine and cleanliness for the hogs while getting it.

### SHEEP.

The year 1904 was a prosperous one for sheepmen. The strong demand for wool and the equally strong demand for mutton, together made sheep values and prospects so satisfactory that a strong demand for feeders was inevitable. In fact, the feeder demand of 1904 was insatiable, and the number of sheep and lambs shipped out of Chicago to feed lots was limited only by exhaustion of the supply. Had it been possible to fill all the orders in the hands of commission men, it is probable that double the number of thin range sheep and lambs available would have been absorbed. The total year's shipment of sheep was the largest on record.

The sheep situation is a bull situation the world over! This country never did produce enough wool, and has always imported heavily. Now outside sources are short, and the number of sheep in the country is not increasing while the population is growing rapidly. All market conditions seem to point to continued prosperity for sheepmen.

During the last decade a most remarkable growth in the demand for mutton has taken place in the United States and in England. The demand for wool is also increasing and values rising. On the other hand, the world's supply of sheep is decreasing. Owing to long droughts, both Australia and

South America are short, while in this country the range territory is being rapidly restricted and its ability to supply mutton and wool is unequal to the demand. Henceforth, America must depend more and more upon its farming sections for sheep, which, if well-bred and well cared for, will prove especially profitable to the small farmer as a means of increased income and soil fertility.

The success attending the efforts of the Chicago market to induce the farmers of Illinois, Michigan, Indiana, Ohio and surrounding states to avail themselves of the profits of sheep feeding, and at the same time utilize farm by-products which have heretofore been wasted, evidenced by the growth of the business at this point, has proved both popular and profitable.

### HORSES.

Larger receipts, and active trade and better prices characterized the Chicago horse market during the year just closed. It made the most creditable showing of any department of Chicago's live stock interests. Being unaffected by the labor troubles, it continued to prosper the year through. The unusual dullness which marked the closing months of 1903 passed away, leaving a clear field for 1904. The results of the year's business were very satisfactory, and every indication points to a continuation of good business.

There is a great and growing demand for good horses possessed of proper breeding and conformation, for both domestic use and export. The automobile has had no appreciable effect on horse values. The world's production of horses has not kept pace with the growing demands of increasing populations. On the other hand the many popular horse shows and live stock expositions, where the finest specimens of the equine race are displayed to admiring multitudes, have raised the ideals of the people and increased their desire for possession of more horses and better horses than ever before, so that a higher standard of excellence is demanded of breeders and dealers generally.

American consumers now pay fully as much for good horses of all classes as foreign customers. On the other hand there is an increasing foreign demand for American-bred horses. Breeders and dealers are studying the requirements of the market more closely than ever before, and the International Live Stock Exposition and other superb horse shows have proved to be immensely valuable in bringing together the ideas of producers and customers. All horse interests are alive to the splendid opportunities now before them. In fact, at no time in the history of the horse industry were conditions more favorable for uninterrupted prosperity than the present.

# TOTAL CARS OF STOCK RECEIVED AT CHICAGO FOR THE YEAR, 1904.

## RECEIPTS.

| Month. | Cattle. | Calves. | Hogs. | Sheep. | Horses. | No. Cars. |
|---|---|---|---|---|---|---|
| January | 14,432 | 18 | 11,115 | 2,251 | 512 | 28,328 |
| February | 13,240 | 31 | 10,844 | 2,392 | 728 | 27,235 |
| March | 13,160 | 85 | 7,982 | 1,871 | 926 | 24,024 |
| April | 12,305 | 339 | 7,290 | 1,514 | 757 | 22,205 |
| May | 11,748 | 429 | 7,730 | 1,438 | 693 | 22,038 |
| June | 12,787 | 313 | 7,885 | 1,887 | 433 | 23,305 |
| July | 7,420 | 122 | 4,915 | 1,168 | 309 | 13,934 |
| August | 12,908 | 161 | 7,371 | 2,041 | 426 | 22,907 |
| September | 12,597 | 157 | 5,270 | 2,244 | 441 | 20,709 |
| October | 16,261 | 76 | 6,619 | 2,950 | 567 | 26,473 |
| November | 15,481 | 100 | 9,875 | 2,831 | 362 | 28,649 |
| December | 13,401 | 61 | 11,115 | 2,167 | 322 | 27,066 |
| **Totals for year** | 155,740 | 1,892 | 98,011 | 24,754 | 6,476 | 286,873 |
| **Totals for 1903** | 168,363 | 1,239 | 101,496 | 25 557 | 6,260 | 302,915 |

## SHIPMENTS.

| Month. | Cattle. | Calves. | Hogs. | Sheep. | Horses. | No. Cars. |
|---|---|---|---|---|---|---|
| January | 5,673 | 9 | 1,359 | 380 | 481 | 7,902 |
| February | 5,442 | 3 | 1,423 | 519 | 690 | 8,077 |
| March | 5,948 | 7 | 1,951 | 559 | 961 | 9,426 |
| April | 5,519 | 7 | 1,610 | 288 | 748 | 8,172 |
| May | 4,914 | 6 | 1,244 | 243 | 599 | 7,006 |
| June | 4,728 | 3 | 953 | 158 | 436 | 6,278 |
| July | 3,798 | 17 | 967 | 472 | 297 | 5,551 |
| August | 5,605 | 41 | 1,277 | 1,143 | 331 | 8,397 |
| September | 5,765 | 29 | 997 | 1,166 | 367 | 8,324 |
| October | 6,015 | 28 | 824 | 1,209 | 499 | 8,575 |
| November | 5,536 | 25 | 1,082 | 497 | 304 | 7,444 |
| December | 5,932 | 20 | 1,040 | 427 | 305 | 7,724 |
| **Totals for year** | 64,875 | 195 | 14,727 | 7,061 | 6,018 | 92,876 |
| **Totals for 1903** | 62,206 | 259 | 12,315 | 5,292 | 6,235 | 86,307 |

## TOTAL LIVE STOCK RECEIVED AT CHICAGO 1904.

### RECEIPTS.

| Month. | Cattle. | Calves. | Hogs. | Sheep. | Horses. | No. Cars |
|---|---|---|---|---|---|---|
| January | 293, 300 | 13, 042 | 869, 814 | 355, 926 | 8, 629 | 28, 328 |
| February | 265, 704 | 12, 847 | 845, 894 | 431, 612 | 12, 863 | 27, 235 |
| March | 261, 076 | 24, 112 | 612, 141 | 374, 680 | 16, 756 | 24, 024 |
| April | 246, 299 | 35, 532 | 558, 122 | 301, 301 | 12, 656 | 22, 205 |
| May | 236, 647 | 39, 515 | 580, 014 | 288, 571 | 10, 479 | 22, 038 |
| June | 267, 681 | 32, 010 | 577, 138 | 332, 442 | 6, 544 | 23, 305 |
| July | 154, 526 | 12, 853 | 349, 558 | 216, 945 | 4, 964 | 13, 934 |
| August | 272, 599 | 17, 976 | 502, 465 | 420, 746 | 7, 018 | 22, 907 |
| September | 277, 068 | 22, 011 | 356, 264 | 466, 951 | 7, 277 | 20, 709 |
| October | 362, 376 | 20, 594 | 477, 217 | 374, 694 | 8, 323 | 26, 473 |
| November | 336, 987 | 21, 253 | 705, 440 | 422, 450 | 5, 432 | 28, 649 |
| December | 282, 922 | 15, 754 | 804, 679 | 318, 312 | 5, 008 | 27, 066 |
| Totals for year | 3, 259, 185 | 267, 499 | 7, 238, 746 | 4, 504, 630 | 105, 949 | 286, 873 |
| Totals for 1903 | 3, 432, 486 | 271, 743 | 7, 325, 923 | 4, 582. 760 | 100, 603 | 302, 915 |

| | |
|---|---|
| Total receipts animals, 1904 | 15, 376, 009 |
| Total receipts animals, 1903 | 15, 713, 515 |

### SHIPMENTS.

| Month. | Cattle. | Calves. | Hogs. | Sheep. | Horses. | No. Cars |
|---|---|---|---|---|---|---|
| January | 111, 409 | 1, 095 | 159, 542 | 63, 110 | 7, 974 | 7, 902 |
| February | 107, 592 | 571 | 180, 529 | 93, 769 | 10, 864 | 8, 077 |
| March | 117, 442 | 885 | 236, 375 | 103, 897 | 16, 152 | 9, 426 |
| April | 107, 867 | 1, 158 | 188, 002 | 51, 334 | 12, 270 | 8, 172 |
| May | 96, 483 | 855 | 143, 597 | 45, 436 | 8, 869 | 7, 006 |
| June | 96, 755 | 842 | 105, 838 | 31, 043 | 6, 707 | 6, 278 |
| July | 74, 155 | 2, 326 | 97, 778 | 93, 983 | 4, 687 | 5, 551 |
| August | 116, 419 | 4, 559 | 123, 163 | 224, 019 | 6, 251 | 8, 397 |
| September | 126, 341 | 3, 541 | 98, 076 | 239, 701 | 6, 966 | 8, 324 |
| October | 132, 335 | 2, 851 | 83, 131 | 251, 401 | 7, 316 | 8, 575 |
| November | 118, 823 | 2, 606 | 106, 885 | 97, 473 | 5, 063 | 7, 444 |
| December | 120, 711 | 2, 127 | 103, 106 | 67, 104 | 4, 913 | 7, 724 |
| Totals for year | 1, 326, 332 | 23, 416 | 1, 626, 022 | 1, 362, 270 | 98, 032 | 92, 876 |
| Totals for 1903 | 1, 269, 455 | 26, 244 | 1, 237, 554 | 1, 000, 109 | 94, 768 | 86, 307 |

| | |
|---|---|
| Total shipments animals, 1904 | 4, 436, 072 |
| Total shipments animals, 1903 | 3, 628, 130 |

## TOTAL RECEIPTS OF STOCK FOR THIRTY-NINE YEARS.

| Year. | Cattle. | Calves. | Hogs. | Sheep. | Horses. |
|---|---|---|---|---|---|
| 1865 5 days | 613 | .......... | 17,764 | 1,433 | .......... |
| 1866 | 393,007 | .......... | 961,746 | 207,987 | 1,553 |
| 1867 | 329,188 | .......... | 1,696,738 | 180,888 | 847 |
| 1868 | 324,524 | .......... | 1,706,782 | 270,891 | 1,902 |
| 1869 | 403,102 | .......... | 1,661,869 | 340,072 | 1,524 |
| 1870 | 532,964 | .......... | 1,693,158 | 349.853 | 3,537 |
| 1871 | 543,050 | .......... | 2,380,083 | 315,053 | 5,963 |
| 1872 | 684,085 | .......... | 3,252,623 | 310,211 | 12,145 |
| 1873 | 761,428 | .......... | 4,437,750 | 291,734 | 20,289 |
| 1874 | 843,966 | .......... | 4,258,379 | 333,655 | 17,588 |
| 1875 | 920,843 | .......... | 3,912,110 | 418,948 | 11,346 |
| 1876 | 1,096,745 | .......... | 4,190,006 | 364,095 | 8,159 |
| 1877 | 1,033,151 | .......... | 4,025,970 | 310,240 | 7,874 |
| 1878 | 1,083,068 | .......... | 6,339,654 | 310,420 | 9,415 |
| 1879 | 1,215,732 | .......... | 6,448,330 | 325,119 | 10,473 |
| 1880 | 1,382,477 | .......... | 7,059,555 | 335,810 | 10,398 |
| 1881 | 1,498,550 | 48,948 | 6,474,844 | 493,624 | 12,909 |
| 1882 | 1,582,530 | 24,965 | 5,817,504 | 628,887 | 13,856 |
| 1883 | 1,878,944 | 30,223 | 5,640,625 | 749,917 | 15,255 |
| 1884 | 1,817,697 | 52,353 | 5,351,967 | 801,630 | 18,602 |
| 1885 | 1,905,518 | 58,500 | 6,937,535 | 1,003,598 | 19,356 |
| 1886 | 1,963,900 | 51,290 | 6,718,761 | 1,009,790 | 27,599 |
| 1887 | 2,382,008 | 65,859 | 5,470,852 | 1,360,862 | 46,404 |
| 1888 | 2,611,543 | 96,086 | 4,921,712 | 1,515,014 | 55,333 |
| 1889 | 3,023,281 | 122,968 | 5,998,526 | 1,832,469 | 79,926 |
| 1890 | 3,484,280 | 175,025 | 7,663,829 | 2,182,667 | 101,566 |
| 1891 | 3,250,359 | 205,383 | 8,600,805 | 2,153,537 | 94,396 |
| 1892 | 3,571,796 | 197,576 | 7,714,435 | 2,145,079 | 86,998 |
| 1893 | 3,133,406 | 210,557 | 6,057,278 | 3,031,174 | 82,492 |
| 1894 | 2,974,363 | 160,949 | 7,483,228 | 3,099,725 | 97,415 |
| 1895 | 2,588,558 | 168,740 | 7,885,283 | 3,406,739 | 113,193 |
| 1896 | 2,600,476 | 138,337 | 7,659,472 | 3,590,655 | 105,978 |
| 1897 | 2,554,924 | 122,876 | 8,363,724 | 3,606.640 | 111,601 |
| 1898 | 2,480,897 | 132,733 | 8,817,114 | 3,589,439 | 118,754 |
| 1899 | 2,514,446 | 136,676 | 8,177,870 | 3,682,832 | 111,611 |
| 1900 | 2,729,046 | 136,310 | 8,109,064 | 3,548,885 | 99,010 |
| 1901 | 3,031,396 | 181.824 | 8,290,494 | 4,044,095 | 109,353 |
| 1902 | 2,941,559 | 251,747 | 7,895,238 | 4,515,716 | 102,100 |
| 1903 | 3,432,486 | 271,743 | 7,325,923 | 4,582,760 | 100,603 |
| 1904 | 3,259,185 | 267,499 | 7,238,746 | 4,504,630 | 105,949 |
| **Total** | 74,759,081 | 3,309,267 | 224,657,346 | 65,745,773 | 1,953,272 |

## RANGE OF PRICES FOR CATTLE.

### MONTHLY FOR YEAR 1904.

### CATTLE.

| 1904. | Native Steers 1500–1800 pounds. | Native Steers 1200–1500 pounds. | Poor to Best Cows and Heifers. | Native Stockers and Feeders. | Texas and Western Steers. |
|---|---|---|---|---|---|
| January | $4.55@5.90 | $3.65@5.85 | $2.50@5.10 | $2.00@4.25 | $ @ |
| February | 4.35@6.00 | 3.50@6.00 | 2.85@5.00 | 2.00@4.35 | 3.10@4.65 |
| March | 4.50@5.80 | 3.65@6.00 | 3.25@4.80 | 2.00@4.60 | 3.20@5.00 |
| April | 4.45@5.80 | 3.80@5.70 | 3.25@5.00 | 2.10@4.50 | 4.25@4.80 |
| May | 4.60@5.90 | 3.90@5.90 | 3.40@5.35 | 2.10@5.00 | 3.65@5.10 |
| June | 5.60@6.70 | 4.50@6.65 | 3.40@5.75 | 2.25@5.05 | 3.00@5.95 |
| July | 5.40@6.50 | 4.40@6.65 | 3.50@5.75 | 2.10@4.25 | 2.90@5.35 |
| August | 4.75@6.40 | 3.80@6.40 | 2.50@5.30 | 1.90@4.65 | 2.40@4.85 |
| September | 4.90@6.50 | 3.65@6.55 | 2.30@5.00 | 1.75@4.10 | 2.50@5.10 |
| October | 5.10@7.00 | 3.50@7.00 | 2.25@5.60 | 1.50@4.25 | 2.40@5.65 |
| November | 4.70@7.30 | 3.50@7.25 | 2.30@5.50 | 1.50@4.50 | 2.25@5.40 |
| December | 4.40@10.50 | 3.35@12.25 | 2.00@7.50 | 1.50@4.75 | 2.40@5.00 |
| Range 1904 | 4.35@10.50 | 3.35@12.25 | 2.00@7.50 | 1.50@5.50 | 2.40@5.65 |
| Range 1903 | 4.10@7.55 | 3.35@8.35 | 2.50@5.50 | 1.50@5.20 | 2.55@5.10 |
| Range 1902 | 4.25@14.50 | 3.60@9.00 | 3.35@8.25 | 1.90@6.00 | 2.55@7.65 |
| Range 1901 | 4.75@9.30 | 3.60@12.00 | 2.00@8.00 | 1.65@5.15 | 2.75@5.75 |
| Range 1900 | 4.70@15.50 | 3.90@11.00 | 1.75@6.00 | 2.10@5.25 | 3.00@5.90 |
| Range 1899 | 4.60@8.50 | 4.00@8.25 | 2.00@6.85 | 2.50@5.40 | 3.10@6.75 |
| Range 1898 | 4.10@6.25 | 3.80@6.15 | 2.00@5.40 | 2.50@5.40 | 3.15@5.40 |
| Range 1897 | 4.00@6.00 | 3.35@6.00 | 1.75@5.40 | 2.40@4.75 | 2.75@4.90 |
| Range 1896 | 3.40@6.50 | 2.90@6.25 | 1.75@4.40 | 2.20@4.10 | 2.10@5.50 |
| Range 1895 | 3.60@6.60 | 2.90@6.40 | 2.00@5.75 | 2.25@5.15 | 2.25@5.75 |
| Range 1894 | 3.00@6.60 | 2.90@6.00 | 1.75@4.40 | 2.00@4.15 | 2.50@5.00 |

| | |
|---|---|
| Valuation of cattle 1904 | $149,192,290 |
| Valuation of calves 1904 | 2,574,677 |

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Friday, December 2, 1904, fifty-nine carloads of fat steers, which were exhibited at the International Live Stock Exposition were sold, the Escher championship load of Angus yearlings going at $12.25, while the grand championship load of the show, Krambeck's Angus steers, sold at $10.50. An average of $7.56½ was made for the whole sale. The Angus steers averaged $8.25, Herefords $7.22 and Shorthorns $7.40

## RANGE OF PRICES FOR HOGS.

### MONTHLY FOR YEAR 1904.

### HOGS.

| 1904. | Heavy Packing 250@500 lbs. | Mixed Packing 200@250 lbs. | Light Bacon 150@200 lbs. |
|---|---|---|---|
| January | $ 4.40@5.20 | $ 4.35@5.20 | $ 4.20@5.00 |
| February | 4.55@5.80 | 4.50@5.75 | 4.30@5.60 |
| March | 4.80@5.82½ | 4.85@5.80 | 4.45@5.60 |
| April | 4.25@5.50 | 4.40@5.47½ | 4.30@5 40 |
| May | 4.10@4.95 | 4.15@4.95 | 4.15@4.90 |
| June | 4.30@5.45 | 4.35@5.45 | 4.35@5.40 |
| July | 4.70@5.85 | 4.90@5.80 | 5.00@5.90 |
| August | 4.50@5.72½ | 4.80@5.75 | 4.95@5.80 |
| September | 4.50@6.30 | 4 95@6.37½ | 5 20@6.30 |
| October | 4.50@6.30 | 4 70@6.30 | 4.70@6.20 |
| November | 4.30@5.25 | 4.35@5.25 | 4.15@5.15 |
| December | 4.15@5.20 | 4.20@4.87½ | 4.00@4.80 |
| Range 1904 | $ 4.10@6.30 | $ 4.15@6.37½ | $ 4.00@6.30 |
| Range 1903 | 3.85@7.87½ | 3.90@7.80 | 3.90@7.70 |
| Range 1902 | 5.70@8.25 | 5.65@8.20 | 5.40@7.95 |
| Range 1901 | 4.80@7.37½ | 4.85@7.30 | 4.75@7.20 |
| Range 1900 | 4.15@5.85 | 4.15@5.82½ | 4.10@5.75 |
| Range 1899 | 3.35@4.95 | 3.40@5.00 | 3.30@5.00 |
| Range 1898 | 3.10@4.80 | 3.10@4 70 | 3.10@4.65 |
| Range 1897 | 3.00@4.45 | 3.20@4.50 | 3.20@4.65 |
| Range 1896 | 2.40@4.45 | 2.75@4.45 | 2.80@4.45 |
| Range 1895 | 3.20@5.45 | 3.25@5.55 | 3.25@5.70 |
| Range 1894 | 3.90@6.75 | 3.90@6.55 | 3.50@6.45 |

Valuation of hogs, 1904 .......... $79,626,206

Average weight of hogs, 1904 .......... 220 lbs.

International show hogs sold December, 1904, at $5.20; top on open market, $4.87½

## RANGES OF PRICES FOR SHEEP.

### MONTHLY FOR YEAR 1904.

### SHEEP.

| 1904. | Native Sheep 60@140 lbs. | Native Yearlings and Lambs | Western Sheep 70@140 lbs. | West. and Mexican Lambs. |
|---|---|---|---|---|
| January | $2.00@4.75 | $3.00@6.35 | $2.25@4.75 | $ 3.00@6.25 |
| February | 2.00@4.75 | 2.75@6.15 | 2.40@4.75 | 4.00@6.25 |
| March | 2.00@5.50 | 2.75@5.90 | 2.75@5.45 | 4.25@6.15 |
| April | 2.50@6 00 | 2.50@6.25 | 3.50@5.80 | 4.00@7.05 |
| May | 2.00@6.00 | 3.00@6.75 | 2.75@5.80 | 3.40@7.10 |
| June | 1.75@5.50 | 3.25@6.75 | 2.25@5.50 | 3.50@7.50 |
| July | 1.50@5.50 | 3.50@7.75 | 2.00@4.65 | 4.65@7.40 |
| August | 2.00@4.25 | 3.00@7.00 | 2.00@4.25 | 4.00@6.85 |
| September | 1.75@4.50 | 3.00@6.35 | 2.00@4.35 | 4.00@6.00 |
| October | 1.50@4.75 | 3.00@6.25 | 2.00@4.75 | 3.25@5.90 |
| November | 1.75@5.00 | 3.50@6.20 | 2.00@4.85 | 3.60@6.00 |
| December | 2.50@5 65 | 4.25@7.40 | 3.00@5 60 | 4.50@7 35 |
| Range 1904 | $1.50@6.00 | $2.50@7.75 | 2.00@5.80 | 3.00@7.50 |
| Range 1903 | 1.25@7.00 | 2.50@8.00 | 2.00@7.00 | 2.50@7.90 |
| Range 1902 | 1.25@6.50 | 2.00@7.25 | 1.25@6.30 | 2.50@7.60 |
| Range 1901 | 1.40@5.25 | 2.00@6.25 | 1.50@5.25 | 2.75@5.90 |
| Range 1900 | 2.00@6.50 | 3 00@7.60 | 3.00@6.50 | 4.00@7.60 |
| Range 1899 | 2.25@5.65 | 3.50@7.45 | 2.50@5.55 | 4.00@7.00 |
| Range 1898 | 2.00@5.25 | 3.50@7.10 | 3.00@5.25 | 3.75@6.75 |
| Range 1897 | 1.25@5.25 | 3.00@6.40 | 2.15@5.35 | 3.50@7.25 |
| Range 1896 | 1.00@4.60 | 2.75@6.50 | 2.15@4.30 | 3.50@6.25 |
| Range 1895 | 1.25@5.50 | 2.25@6.35 | 2.50@5.35 | 3.00@6.00 |
| Range 1894 | 1 00@5.40 | 2.00@6.00 | 2.00@5.40 | 2.50@5.80 |

Valuation of sheep, 1904 .......... $18.428,319

Spring lambs sold during 1904 as high as $20.00, with a good many at $7.00@10.00.

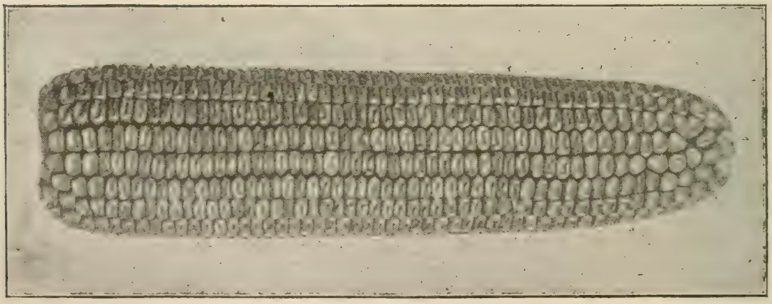
## AVERAGE PRICES FOR HORSES.

### MONTHLY FOR YEAR 1904.

### HORSES.

| 1904. | Draft horses. | Carriage teams. | Drivers. | General use | Bussers and trammers. | Saddlers. | Southern Chunks. |
|---|---|---|---|---|---|---|---|
| January | $170.00 | $430.00 | $150.00 | $125.00 | $135.00 | $160.00 | $67.50 |
| February | 175.00 | 495.00 | 155.00 | 135.00 | 145.00 | 170.00 | 72.50 |
| March | 185.00 | 500.00 | 160.00 | 135.00 | 150.00 | 180.00 | 72.50 |
| April | 185.00 | 500.00 | 160.00 | 135.00 | 150.00 | 180.00 | 72.50 |
| May | 180.00 | 500.00 | 160.00 | 135.00 | 150.00 | 180.00 | 67.50 |
| June | 180.00 | 490.00 | 155.00 | 130.00 | 145.00 | 170.00 | 65.00 |
| July | 175.00 | 475.00 | 150.00 | 125.00 | 140.00 | 165.00 | 62.50 |
| August | 175.00 | 465.00 | 145.00 | 120.00 | 140.00 | 160.00 | 60.00 |
| September | 170.00 | 460.00 | 140.00 | 120.00 | 135.00 | 155.00 | 60.00 |
| October | 170.00 | 460.00 | 140.00 | 120.00 | 135.00 | 155.00 | 60.00 |
| November | 175.00 | 460.00 | 140.00 | 120.00 | 135.00 | 155.00 | 55.00 |
| December | 180.00 | 455.00 | 135.00 | 120.00 | 135.00 | 155.00 | 50.00 |
| **Average 1904** | $177.00 | $475.00 | $150.00 | $140.00 | $140.00 | $160.00 | $64.00 |
| **Average 1903** | 171.00 | 455.00 | 150.00 | 122.00 | 140.00 | 156.00 | 62.00 |
| **Average 1902** | 166.00 | 450.00 | 145.00 | 117.00 | 135.00 | 151.00 | 57.00 |
| **Average 1901** | 157.00 | 400.00 | 137.00 | 102.00 | 121.00 | 147.00 | 52.00 |

**Valuation of horses, 1904** ........ $14, 303, 115



A "College-bred" Ear.

# LARGEST RECEIPTS.

## LARGEST RECEIPTS OF STOCK IN ONE DAY.

| | |
|---|---|
| Cattle, September 28, 1903 | 44,445 |
| Calves, April 12, 1904 | 6,016 |
| Hogs, February 11, 1895 | 74,551 |
| Sheep, September 29, 1902 | 59,362 |
| Horses, March 21, 1904 | 1,975 |
| Cars, January 11, 1904 | 3,228 |

## LARGEST RECEIPTS OF STOCK IN ONE WEEK.

| | |
|---|---|
| Cattle, week ending September 19, 1891 | 95,524 |
| Calves, week ending April 16, 1904 | 10,424 |
| Hogs, week ending November 20, 1880 | 300,488 |
| Sheep, week ending October 18, 1902 | 162,459 |
| Horses, week ending March 30, 1895 | 4,369 |
| Cars, week ending December 13, 1902 | 8,474 |

## LARGEST RECEIPTS OF STOCK IN ONE MONTH.

| | |
|---|---|
| Cattle, September, 1892 | 385,466 |
| Calves, May, 1904 | 39,515 |
| Hogs, November, 1880 | 1,111,997 |
| Sheep, October, 1902 | 613,547 |
| Horses, March, 1897 | 17,782 |
| Cars, December, 1891 | 31,910 |

## LARGEST RECEIPTS OF STOCK IN ONE YEAR.

| | |
|---|---|
| Cattle, 1892 | 3,571,796 |
| Calves, 1903 | 271,743 |
| Hogs, 1898 | 8,817,114 |
| Sheep, 1903 | 4,582,760 |
| Horses, 1898 | 118,754 |
| Cars, 1890 | 311,557 |

## VALUATION OF STOCK FOR THIRTY-NINE YEARS.

| | |
|---|---|
| 1866 | $ 42,765,328 |
| 1867 | 42,375,241 |
| 1868 | 52,506,288 |
| 1869 | 60,171,217 |
| 1870 | 62,090,631 |
| 1871 | 60,331,082 |
| 1872 | 87,500,000 |
| 1873 | 61,321,162 |
| 1874 | 115,049,140 |
| 1875 | 117,533,942 |
| 1876 | 111,185,650 |
| 1877 | 99,024,100 |
| 1878 | 106,101,879 |
| 1879 | 114,795,834 |
| 1880 | 143,057,626 |
| 1881 | 183,007,710 |
| 1882 | 196,670,221 |
| 1883 | 201,252,772 |
| 1884 | 187,387,680 |
| 1885 | 173,598,002 |
| 1886 | $ 166,741,754 |
| 1887 | 176,644,597 |
| 1888 | 182,202,789 |
| 1889 | 203,321,924 |
| 1890 | 231,344,879 |
| 1891 | 239,434,775 |
| 1892 | 253,836,502 |
| 1893 | 249,542,377 |
| 1894 | 228,153,029 |
| 1895 | 200,584,380 |
| 1896 | 187,745,655 |
| 1897 | 216,305,396 |
| 1898 | 229,301,296 |
| 1899 | 233,711,180 |
| 1900 | 262,154,272 |
| 1901 | 283,955,239 |
| 1902 | 312,884,386 |
| 1903 | 288,152,707 |
| 1904 | 264,124,607 |
| Grand total | $6,657,867,249 |

## CATTLE AND HOGS SOLD FOR SLAUGHTER FROM IOWA IN 1903.

The figures given below, relative to the number and value of cattle and hogs sold for slaughter from Iowa in 1903, were gathered from the Report of the Union Stock Yards and Transit Company, and the Year Book, issued by the Chicago Daily Drovers Journal. These reports show that 40 per cent of all cattle and 50 per cent of the hogs received at the Chicago market were from Iowa. A conservative estimate places the number of Iowa cattle marketed in Chicago at 90 per cent and 10 per cent to all other markets; hogs marketed in Chicago, 66⅔ per cent and 33⅓ per cent to all other markets. The percentage of hogs marketed at points other than Chicago is growing each year, and for the year 1904 has been placed as high as 50 per cent. The St. Joseph hog market the past two years has been about with the Chicago market, and on several occasions topped it five to ten cents. Shippers will do well to watch these markets more closely in the future for they are bound to grow, and it will be to the shippers advantage to ship to some point other than Chicago.

### IOWA CATTLE SOLD FOR SLAUGHTER IN 1903.

| | | |
|---|---|---|
| Number of cars received at the Chicago market | | 66,341 |
| Number of cars received at other markets | | 6,634 |
| Total number of cars received at all markets | | 72,975 |
| Number of cattle received at the Chicago market | | 1,326,820 |
| Number of cattle received at other markets | | 132,682 |
| Total number of cattle sold for slaughter | | 1,459,502 |
| Average weight of cattle marketed (this from U. S. Y. Rpt. 1904) | | 1,039 lbs. |
| Average selling price per cwt., all classes | $ | 4.74 |
| Average value per head | | 48.25 |
| Total value of Iowa cattle received at Chicago market | | 64,019,065.00 |
| Total value of Iowa cattle received at all other markets | | 6,401,906.00 |
| Total value of cattle marketed as above year 1903 | $ | 70,420,971.00 |

### IOWA HOGS SOLD FOR SLAUGHTER IN 1903.

| | | |
|---|---|---|
| Number of cars received at the Chicago market | | 47,541 |
| Number of cars received at all other markets | | 15,847 |
| Total number of cars received at all markets | | 62,388 |
| Number of hogs received at the Chicago market | | 3,805,680 |
| Number of hogs received at all other markets | | 1,268,560 |
| Total number of hogs sold for slaughter in 1903 | | 5,074,240 |
| Average weight of hogs marketed | | 227 lbs. |
| Average selling price per cwt | $ | 6.00 |
| (The above two items are the Chicago quotations.) | | |
| Average value per head | | 13.62 |
| Value of Iowa hogs received at the Chicago market | | 51,823,361.00 |
| Value of Iowa hogs received at all other markets | | 17,274,454.00 |
| Total value of hogs marketed for 1903 | $ | 69,097,815.00 |

# CATTLE.

## AN IOWA FEEDER'S EXPERIENCE.

*Orville Lee, Sac County, in Breeders' Gazette.*

As to the buying, breeding, handling and feeding of the fifty-two steers which I sold on the Chicago market May 23d at $5.10 per cwt., I am glad to furnish such information as I am in possession of regarding these cattle, for I can assure you that I have been very much benefited by the experience of many of your contributors as I have read their articles in your journal. I shall be much pleased if anything in this experience shall suggest a thought that will be of benefit to any brother feeder.

The fifty-two steers were a part of a bunch of one hundred and eighty steers purchased by my brother Lamont Lee and myself in the vicinity of Sac City, Iowa, during the months of February, March and April of 1903, most of the bunch being bought during the month of April. The one hundred and eighty head were placed in a well drained twenty-acre lot and fed on good tame hay and corn fodder until grass time, May 8th, when they were weighed and divided into two bunches as nearly even as could be, my brother taking one bunch of ninety and myself the other. The average weight of this bunch was seven hundred and eight pounds at this time and we settled any difference which might appear in the two bunches at an agreed price of four cents per pound. We thought this to be a fair market value for them at that time, and in making any calculations as to profit or loss I shall figure from this basis.

A word here in regard to dividing these cattle into two bunches: we placed the whole bunch in a feed-yard and the hired men were instructed to bring them to the scales in bunches of six. Each draft after being weighed was placed alternately in two yards, after which we flipped coppers to see which should have the north yard and which the south one. On comparing weights we found that there was just thirty pounds difference in the weight of the two bunches. The ninety cattle which fell to me were placed May 9th in a good clover and blue grass pasture, where they remained until November 1st, when they were put on a field of after-grass; when the weather turned cold in December they were driven to the yard with a shed at night and given a light feed of fodder, corn and all, until January 2, 1904. During this last month they consumed fifteen acres of good corn. On January 2d they were placed in a feed-yard with good open sheds, hay-racks and self-feeders and during the next ten days were worked up to a full feed of shelled corn and oilmeal, mixed four pounds of meal to every bushel of shelled corn. This was placed in the self-feeders and the ration was never changed except that a light feed of ear corn was given occasionally. For roughness they were given all the wild hay, tame hay and oat straw they would clean up and on cold mornings a feed of corn fodder. Every steer in the lot made a good even growth and the fifty-two head averaged one thousand three hundred and nineteen pounds in Chicago on the day they were sold.

I still have thirty-eight head of these steers in the yard, being the top of the bunch. As these thirty-eight were selected in regard to quality rather than weight I am judging that this bunch will weigh one thousand two hundred and seventy-five pounds each and that they would have sold on the Chicago market on the day the others were there for $5.35. I expect to feed these two loads of cattle for thirty days longer.

As to the breeding I would say that they were Shorthorn, Angus and Hereford grades, the Shorthorns largely predominating. A part of them were carrying their horns when bought, and I have long ago quit sawing the horns off cattle older than yearlings.

It will be noticed that these cattle made an average gain of just about six hundred pounds in twelve and one-half months from the feed-yards to Chicago; that they were on pasture without grain two hundred and ten days of that time, were given a light grain ration on pasture thirty days and were on full feed one hundred and forty days. During the full-feed period they consumed fifty-six bushels of corn per steer. During the thirty days preparatory feed they consumed fifteen acres of good corn or about eight bushels each, or a total of sixty-four bushels, which, at forty-nine cents, the average price, this corn has cost me in the self-feeders, would be $31.36; pasturing for eight months at seventy-five cents per month would be $6; seven hundred and eight pounds at four cents, May 8, 1903, would figure $28.32, making the cost $65.68. They netted per head in Chicago, May 23, 1904, $63.25, causing a loss per head of $2.43.

There were about eighty hogs following these cattle which were bought at from $5 to $5.10, and a car of them sold May 21st at $4.35 at home. These hogs weighed about one hundred and sixty pounds when they went into the feed-yard, and the carload averaged two hundred and seventy pounds when sold. With the decline in the market I am figuring that the hogs also lost money, but that it would be only fair to allow the hog feed to pay for the hay and labor during the full-feed period, as the cattle were not to blame for the decline in the hog market, and I believe this will usually be a fair basis from which to figure. While this was a fairly well-bred bunch of cattle it is only by the most careful selection that as good a bunch can be gotten together in this locality.

Many of our farmers insist on using scrub bulls. You ask me to suggest a remedy for this. I have none. I have never been able to understand the cause of this trouble which costs the farmers so many thousands of dollars every year. I have thought that if cattle should get so cheap that it would pay to raise only the best, that maybe the farmer would see the point and either go out of the business or breed something good. It may be that a law could be framed whereby there would be a tax or penalty for keeping a scrub bull. Perhaps this would have the desired effect and cause the farmer to see the point. I know that the cheaper grades of cattle have sold and are now selling relatively higher than the better class, but it is only because they have been fed this high-priced corn in small numbers, and even at the ruinously low prices at which they could have been bought during the past season feeders were afraid to make the venture.

I consider this to have been an exceptional year. I have always had a doctrine that good cattle bought right and fed right always made money, but I know of no one who has made any money this season. I am looking for better prices in the near future, but it will help only the man who has had the nerve to get his cattle on feed so as to have them ready during the next eighty days, for I believe the West is full of cattle.

I hope that many have done better than I have and shall be glad to hear of their methods. I know of many who have failed to make money this year, but what I want to know is how the fellow has managed who is ahead of the deal.

## CO-OPERATION IN OWNING PURE-BRED BULLS.

*John Thompson, Woodbury County, in Breeders' Gazette.*

From attendance at live stock shows and fairs one is apt to get the impression that pure-bred cattle are increasing very rapidly. No doubt they are increasing at a rapid rate, but when one comes to study statistics one finds a smaller percentage of pure-breds than he would expect. According to the twelfth census we have in the United States in the neighborhood of seven hundred thousands pure-bred cattle of all breeds among a total of about sixty-eight million head. It has also been estimated that in the neighborhood of 20 per cent of our cattle are grades, having one-half or more of improved blood in their veins. This leaves a tremendous percentage of scrubs and grades with less than 50 per cent improved blood. We have in round numbers five million seven hundred and forty thousand farms and hence only 1.2 head of pure-bred cattle to every ten farms. Many farms, as is well known, have large herds of pure-bred cattle, and therefore it is safe to estimate that when we except the herds of breeders of registered cattle we will find only one registered head of cattle to each ten farms. This suggests many prosperous years for the breeders of pure-bred cattle. The large farmers and the cattle breeders of the ranges are in a position to use registered bulls with which to grade up their herds and they are making comparatively rapid progress in that direction. In other words, these considerations indicate, and experience and observation corroborate the same, that the pure-bred cattle of the country are not owned by the small farmers. For this condition of affairs we find two main reasons. There is a small per cent of farmers who do not appreciate the value of registered stock and who do not understand how to grade up their herds; they are ignorant of the laws of breeding and are laboring under the erroneous impression that a grade bull is as valuable as a pure-bred animal for all practical purposes. This is one reason why our cattle are not more rapidly graded up than they are, and to that class of farmers this article will not appeal.

There is, however, another class of farmers, and the writer believes that they are in the majority, who argue that they can not afford to keep registered bulls for the reason that they can use such bulls for only two or three years and then are obliged to sell them for beef in order to avoid inbreeding; this they have to do at a heavy sacrifice. That this argument has a great deal of force can not be denied. It is a serious matter to have a bull depreciate in value to the extent of $150 in the course of two and a half or three years, especially so when a man only has from ten to fifteen cows.

Could these farmers see a way clear by means of which they could obtain full value of their bulls, retain them for ten or twelve years, instead of two or three, a large proportion would purchase bulls in the near future and begin to grade up their herds in earnest.

Any practical method, therefore, that will enable the small farmer to get the full value out of his sire ought to appeal to him; in fact, it is doubtful if general grading up of our cattle among the small farmers will be brought about until some such method is worked out. In many localities in foreign countries a few bulls are kept in a neighborhood and the farmers lead their cows to these places to be bred and good results are obtained, but it is not a practical method for this country; time is too precious and labor too high for the farmers who own from ten to fifteen cows to lead them to a bull two or three miles distant. A few years ago some of the railroads introduced bulls along their lines and changed them at intervals so as to avoid inbreeding. That was all right as far as it went, and such a plan may be fairly well suited to new countries where comparatively little stock is kept, but it is not practical in old communities where considerable stock is bred; here the farmer must own his own bull. A discription of how to accomplish this on the most economical basis is the purpose of this article.

The method which the writer would suggest is entirely practicable and has a number of good features; it is a system that depends upon co-operation among a number of farmers within a township or within a community the size of a township. It is reasonable to suppose that ten farmers can be found within the area mentioned who, barring accidents, if they could be assured the service of a good registered bull for ten years by the purchase of only one animal, could readily be induced to buy one. It is also reasonable to suppose that ten farmers could be found within that area who could all agree on the same breed. For sake of illustration, suppose ten farmers agreed that they preferred to breed their cows to Shorthorn bulls. Now suppose these farmers get together and talk over as to what price they can afford to pay and what age of bulls they wish to secure; we will say that they agree to pay from one hundred and fifty to two hundred dollars for bulls about one and one-half years of age. In order to secure these sires of uniform quality and type and in order to get as much for the money as possible it would no doubt be found advisable to appoint a committee of three of the best cattle judges from among their number to purchase animals desired. Suppose the committee purchases ten bulls, ranging in price from one hundred and fifty to two hundred dollars; say they pay one thousand seven hundred and fifty dollars for the ten, or an average of one hundred seventy-five; dollars this amount should then be paid by each man. After bulls have been purchased, let them draw numbers for the bulls in such manner that no favoritism in the first distribution of the animals can be shown. Each man now owns his bull and must run his own risk incident to such ownership.

Objection may be urged to this method of purchasing and distribution on the ground that some of the farmers would pay more for their bulls than they actually cost. On the other hand, it is reasonable to suppose that this committee of three, who is in the market for ten bulls, could purchase them enough cheaper and secure enough better quality than if each man purchased his own bull independently of the others to offset this objection. Another decided advantage, which in the long run would more than offset the slight differences in cost that might arise, would be more than counterbalanced by the fact that a more uniform lot of bulls could be secured than it would be possible to obtain if individuals purchased them. Different methods might suit different communities but they should, of course, be agreed upon before hand. After having used these bulls for one or two years, according to the agreement of the co-operating farmers, it should be understood that exchange would take place between them. For reasons that will appear later the writer would advise an exchange every year. That is, farmer A, who owned bull No. 1 the first year, would turn his bull over to farmer B, and B would turn his over to C, etc. If thought best, this exchange might be made on a money basis rather than without any money consideration for the reason that some farmers would not take as good care of their stock as others. In other words, conditions should remain such that it would be to the advantage of each man to take the best of care of his bull in order to be able to dispose of him advantageously at the end of the stated time. It might be a good plan to have a competent disinterested committee set a value on each bull at the end of each year and then have exchanges made on that basis. In case a bull should become unmanageable or otherwise objectionable the person who owned him at that particular time would have to stand the loss. This method of exchange would make it possible to get the full value out of each bull, as they could all remain in service as long as they were profitable breeders, and hence the necessity of buying an expensive bull every two years would be done away with.

While to get the full value out of each bull is of sufficient importance to make it worth while for farmers to co-operate to the extent mentioned there is still another factor which would prove of equal if not of greater value that would incidentally accrue from such co-operation. Some time ago *The Gazette* published a number of articles from Prof. W. M. Hays of the Minnesota Experiment Station entitled "Breeding Animals and Plants." In some of those communications Professor Hays advocated county breeding of different classes of farm animals and brought out the fact that county co-operation in breeding would make it possible to carry on extensive operations with a great many individuals. Breeding on an extensive scale, it was pointed out, would afford an opportunity to measure the breeding value o the males in terms of their offspring and at the same time would also make it possible to compare the breeding value of the females. Breeders are well aware of the fact that individuals of exceptional and superior value, whether in the plant or in the animal kingdom, are comparatively few and if progress is to be made in the development of a species we must find a method by means of which these few superior individuals can be found. Plant breeding as compared to animal breeding is much simpler because one may own millions of individuals of a variety of grain and hence, if he follows correct methods of selection, it is entirely possible for one man to originate or to improve a variety of grain in from ten to fifteen years. With domestic animals the question can not be solved in so short a time, first because they do not multiply so rapidly and second because one man can own only a comparatively small number of individuals.

By co-operation in bull ownership, as above recommended, the farmers would find an excellant opportunity for making comparisons among the bulls in terms of their offspring, especially so, where exchanges were made annually instead of biennially. In a few years some of the bulls would prove to be better breeders than others, some for example would be found to transmit milk producing qualities to a greater extent than others and this would especially be true where dairy sires were used or where Shorthorn bulls of a milking strain were employed. It would afford an excellent basis on which to make selection. True, this selection could not, in the hands of practical farmers, yield results that would approach scientific accuracy, yet it is believed that it would prove to be a factor of very great importance. The present method of buying or of breeding a young bull, using him for two years and then selling him to the butcher before his breeding value is known is certainly a most wasteful one, to say the least. Hundreds of animals are annually killed, some of which would no doubt have proved to be of superior value. By the time the offspring of these bulls is full grown and before the bull's prepotency can be measured in terms of his get, he has gone to the shambles. Aside from this, a bull is not at his best for breeding purposes until after he is four years old, provided his powers have not been overtaxed which they never are in a small farmers herd of from fifteen to twenty cows, even though he runs in the pasture with them.

The manner in which comparisons of the breeding value or the prepotency of these bulls could be made can readily be understood upon a moment's reflection. After five years' service each bull will have been used in five different herds and hence there will be calves in each of these herds from the same cows but from different bulls. Each year's crop of calves can be compared with that of the previous year, which will serve as a means of comparing the value of the bulls. Some simple records should be made each year to serve in future years as an aid to interpret the comparative worth of other sires. If these farmers were using dairy bulls, the comparison would naturally be made with the heifers in their capacity as milk and butter producers. If bull No. 1, for example, distinguished himself as a producer of heifers of high butter and milk producing qualities in the majority of herds in which he had served for the first five or six years, it would be evident that he was the best animal. In order to perpetuate his superior blood it would, of course, be necessary to breed him to a registered female but plenty of such cows would be found among these farmers, in fact, it is almost a foregone conclusion that each man would provide himself either at once or a little later on, with a pure-bred heifer since he would be assured the use of a registered sire for at least ten years. This superior bull and some of his sons entitled to registration would then naturally furnish the foundation stock for future generations or they could be sold at big prices.

This method of co-operation then has the following to recommend it: First, the full value would be obtained from each bull and thereby the unnecessary usual depreciation in value at the end of three years avoided; second, the bulls would not have to be slaughtered before they reached their prime, and third, the breeding value of each bull could be tested and superior individuals be found to serve as foundation stock for other herds and the progeny of the very best could be retained by these farmers themselves; fourth, if this method were intoduced it would prove of immense value to the cattle breeders of the country because the demand for pure-bred stock would be greatly increased and it would be of still greater value to the farmers and of incalculable benefit to the country at large. The writer fully understands that there are difficulties in the way of starting a movement of this kind, yet to say that it can not be done is unreasonable. It must be remembered that these co-operating farmers do not need to be next door neighbors, they may be scattered over a whole township just as well as not, as exchange would only take place once per year. If ten farmers can not be found within such an area who would prefer bulls from one breed and who are willing to exchange with each other on some such plan as recommended, certainly four can be found and each man could keep his bull for two and one-half years which would still afford an opportunity to get full value out of the bulls, but comparisons between the bulls can not be made to advantage. Farmers co-operate in other matters and do it successfully; they own stallions in partnership; they own grain elevators, general merchandise, stores, farm implements and many other things. Why not co-operate in bull ownership? It is a subject worth while to discuss at farmers institutes. Possibly breeders of pure-bred stock might help organize farmers in some communities and get them started to think along these lines. If work of this nature has already been begun in some parts of the country according to a systematic plan, let us hear about it, as this would naturally lead others to organize. Any new scheme needs agitation before much can be accomplished, but farmers are learning more and more how to co-operate and there never was a better time to advocate co-operation than at present.

## THE FARMER'S BULL.

*L. N. B. in Breeders' Gazette.*

The work of improving farm cattle is beset with difficulty. It is a time-honored saying that "there is no excellence without great labor." To the owner of a large farm or ranch, on which he has business for one or more bulls to the extent of their capacity, the work seems easy to those of us who have small farms and few cattle. We do not rear enough cattle to attract buyers, and our two or three steers must be sold to the stock buyer of the neighborhood, who has hard work, after much riding, to pick up a carload of mixed stuff—steers, heifers, cows, bulls and stockers. This grade of cattle sells low on the market and much lower at the farm, until there is so little left for the farmer that he loses interest in cattle and looks on them as a necessary nuisance.

The wife wants enough cows to make the butter to go with eggs from which she can get the money to pay for her dry goods and groceries. The wife, as a rule, takes as much interest in the cattle and hens as the farmer does in his hogs and farm crops from which he gets his money. As a rule we find the farmer using a higher grade of boars than of bulls, simply because he usually has more use for the boar and can turn him into money by feeding him off with his pigs. The bull costs more, has to be kept longer, soon becomes unruly and is difficult to control. It is idle to talk of keeping him in a lot by himself. He runs with the cows and heifers and is ever looking for a chance to visit neighboring cattle. The difficulty of getting a good bull is only a part of the farmer's troubles in keeping him. It is not so strange, then, as it seems to the breeder with a good herd or to the editor of a stock journal that farmers are slow to invest in good bulls. Anything that will get calves to sell for veal and to bring the cows fresh meets the farmer's wants.

With this condition of things so common it is not strange that farmers are so slow to invest in good bulls. The condition makes it difficult to interest them in the subject, but their ground is so untenable that they must sooner or later see that there is a better way, as it is clear their sticking to the mongrel and inbreeding no longer pays. The keeping of cattle is a necessity in the older states if the fertility of the farms is to be kept up. Many farmers are recognizing this and are going into the milk business, as that gives them quick cash returns, increases the manure supply, and where the milk or cream goes to a creamery relieves the women of much hard work. Unfortunately they have not gone far enough to see the need of raising better cows to improve the quality and quantity of milk.

The time is here when better bulls must be kept to bring farms up to a paying standard. Improvement does not follow the use of mongrel or cross-bred bulls, nor can we hope for permanent or real improvement except by the persistent use of pure bred bulls of good individuality. By persistent use we do not mean using the same bull for years in the same herd and on his own offspring, but never to use anything but a pure-bred and continuously of the same breed. We know men who think they have advanced ideas, who always use a pedigreed bull, but unfortunately they do not stick to one breed and their herds are only mongrels after years of effort.

It is not enough for the dairyman to use only bulls of some of the dairy breeds, or the beef grower to use only bulls of the beef breeds. The farmer who keeps a few cows is up against a real difficulty when he tries to keep a pure-bred bull. He must have more than common cows or many of them to justify the buying and keeping a high-priced bull. If he has neighbors who will pay a suitable fee for service he may be able to come out even and have the satisfaction of seeing his and his neighbor's cattle improved. But he must be a man of more enterprise and ambition than the average if he persists in his good undertaking. A trial by such a man has paved the way for interesting two or three of his neighbors so that they will join him in the purchase of a bull. They can thus buy even a better one and by the increased use on their own herds and herds of the neighborhood the good bull pays for himself in one or two years. Such a bull can safely be used by his owners for three years or until his produce is ready to breed, which makes the investment all the better. If the bull is an impressive sire it is a pity to sacrifice him for bologna beef, but so long as farmers fail to recognize the value of such a bull and prefer to try the best calf or a cheaper yearling it is difficult to continue his usefulness.

That combination among small farmers is the best way to get the use of good pure-bred bulls we firmly believe. It not only makes the burden lighter on each but helps to promote a public spirit in the work of stock improvement which is of great value in the community. The ideal community is approached when every farmer in it is interested and will use a bull of the chosen breed of the neighborhood. When the farmers of any township or county once agree upon combining on one breed and use only pure-bred bulls of real excellence then we shall hear from them no longer the wail that there is no profit in cattle and it does not pay to buy pedigreed bulls. Three of us once bought a three-year old Airdrie bull that we knew to be quiet and a good stock getter. We paid $100 for him and sold him for $80 after two years. We were well satisfied with the investment. Two other neighbors preferred a Polled-Durham and bought a yearling, kept him two years and he died, yet he is said to have paid for himself by the improvement noted in his calves and the fees received for his service.

A little more enterprise is needed along with the desire for better stock. With these there would be more good bulls used by farmers combining and purchasing pure-bred bulls of decided merit. Two or three neighbors can own a good bull at less cost to each than for each to own one of inferior quality. The cost of keeping one pure-bred is only one-third as much as the keeping of three mongrels and the pure-bred is likely to have better care and give less trouble. Combination is the solution of and co-operation the key to both the imaginary and real troubles with the bull on the small farm. The breaking up of the large ranches and the abandoning or lessening of the operations of the great cattle companies of the plains make it safer for the small farmers to venture on combining to buy pure-bred bulls and increasing and improving their holdings of cattle.

## THE PRODUCTION OF BABY BEEF.

*H. R. Smith, of the University of Nebraska, in Breeders' Gazette.*

In feeding cattle for beef the system to be practiced will depend very largely upon locality, and to some extent upon the season. In some sections the soil and climate are especially favorable for the production of grass and hay, but less so for corn. The operation of flour mills, glucose factories and linseed oil works makes it possible to secure in some localities the by-products from such institutions at reasonable prices.

In some states feeding for pork is carried on so extensively as to make grain in demand at strong prices and roughness a drug on the market. Farms in other states are adapted for dairying or sheep raising, as well as for sheep production, which makes it possible to utilize a part of the cheap roughness in other ways, permitting the use of a proportionately larger amount of grain for beef production.

The season is a factor in any locality in so far as it affects prices on foodstuffs from year to year, necessitating the exercise of business sagacity in the use of those foodstuffs which go the farthest for the money.

Feeding for beef resolves itself into two general methods: the production of early fattened beef, called "baby beef" when carried to the extreme, and the production of older beef by a larger use of roughness and a more gradual process of grain feeding. On those farms where roughness can be profitably used in other ways the production of early beef has two distinct advantages. Young stock requires less food for a given gain than older stock. Records show that for each succeeding year up to the age of three or four years approximately 50 per cent more food is required for a given increase in weight than was required the year previous. This is true for animals kept in the same condition of flesh. It seems entirely reasonable in view of the fact that nearly half of a full feed is required for maintaining a constant weight. The larger the animal the more food is required to keep up body heat, replace wornout tissues, force the blood to circulate and do other necessary work. The same capital invested in young stock produces more beef than in older stock. The man who produces his own feeders realizes his profits sooner in baby beef than in older beef, which is a distinct advantage. The existing conditions favorable to early feeding are the availability of low-down blocky types of cattle which respond well to early heavy feeding, putting on fat and flesh rapidly without a large development of bone, and in the status of the present day market which pays as much for small cattle of high finish as the larger 1,400-pound cattle of former days.

For the production of baby beef calves which have been allowed whole milk fresh from the cow are most suitable because they are in better flesh at weaning time. Such calves should be fed grain just as soon as they can be encouraged to eat. A mixture consisting of one-half whole oats, one-quarter bran and one-quarter shelled corn is very satisfactory for young calves receiving milk. Whole grain is ordinarily more attractive to young calves than ground grain. The whole grain is always fresh while the ground grain is sometimes tainted from exposure to the air. Shelled corn is brittle and easily cracked by young calves which seem fond of nibbling it. Probably no grain is more relished by them, regardless of the fact that it is too starchy for their good when fed alone. Bran, rich in protein, offsets the starchy corn, and, with oats, supplies sufficient bulk to satisfy the craving for something bulky to develop the ruminating powers. Bran is also an excellent bowel regulator useful in connection with a milk diet. Oats tend to check scours in all animals. No single food is more satisfactory to supplement milk for growing calves than whole oats. The mixture of the three foods is more satisfactory. If bran is not available one-half the same quantity of oil-meal could be used instead.

Grain feeding before weaning not only saves milk, but more than that it lessens the shrinkage which is likely to follow weaning. By permitting the calf to drink but once a day before weaning entirely from the cow, full feeding on grain at the time, very little shrinkage is occasioned when the milk is withdrawn entirely. The secret of feeding after weaning time is to hold the milk flesh and keep the calf putting more on top. At this age it is natural for a calf to develop frame. If flesh and fat are to keep pace with this bone development, heavy grain feeding is the only course to pursue. All the grain the calf can be made to consume without taking the edge off his appetite is the safest rule to follow. This is where skill and watchfulness are rewarded. At this stage the calf will stand more corn equal parts of corn, oats and bran.

With spring calves a late summer pasture of blue grass will furnish any protein lacking in the grain ration. If no blue grass pasture is available, and the calves are stable-fed the roughness should consist very largely of clover or alfalfa, since both of these plants are rich in protein and are relished by calves. In producing baby beef there should be no cessation of heavy grain feeding. The first winter corn should be increased to form at least half the grain ration. If oats are high in price, as they usually are in comparison with corn, it is better economy to feed three-quarters corn and one-quarter bran, or, if bran is high, seven-eighths corn and one-eighth oilmeal. Should the roughness consist in part of corn stover, timothy or prairie hay somewhat less corn and a little more bran or oilmeal should be used, since such forms of roughness as corn are too starchy. All the rough feed such beeves will take should be supplied.

The protection during winter may be a shed, open only on the south side, and liberally bedded with straw. With the close of winter a calf under such treatment should weigh eight hundred to nine hundred pounds and be perhaps fat enough to market. It is more profitable, however, to full feed on grass until about July 1st, since cheap grain can be secured during the summer with corn on grass. If some feed like oilmeal, cottonseed-meal, or gluten-feed can be had at a reasonable price it could profitable form ten per cent of the grain ration. This is more necessary when the pasture is timothy or prairie grass.

Baby beeves, fourteen to eighteen months old, weighing from nine hundred to eleven hundred pounds, are more profitably handled by packers late in summer than heavy cattle, and are therefore in greater demand. On farms where roughness can be utilized in other ways the production of baby beef is a profitable industry.

## SOMETHING ABOUT BABY BEEF.

*Breeders' Gazette.*

In the feed-lots of the Corn-belt this winter there are many calves whose owners never fed a calf or beef before. The fact that fat yearlings are preferred by the buyers as a general thing has been pressed home upon feeders of the whole country in a most convincing manner and if predictions heard on all hands are to be believed this business is just in the swaddling clothes of its merest infancy. Therefore a mighty change has come or is coming over the spirit of the average feeder's dream. There are a few things which must be reckoned with in this matter and they must not be lost sight of for a moment.

Baby beef is not the emanation of a few days' feeding. There is no such thing as "warming-up" or "short-feeding" calves. Again, it is impossible to buy up a lot of calves, no matter where they come from nor how well bred they may be, and then make satisfactory baby beef of them without the most intensive care and most thorough pushing for a considerable period of time. Baby beef or fat yearlings may be said to range in age from fourteen to twenty-two months. When a man sells calves in quantity he tries to get his money out of them when they are from five to six months old. Therefore, at the very best, there is a period from nine to sixteen months in which the finishing process must extend. Nor can calves be roughed through for a while, allowed to lose the milk flesh and then pushed safely along to the same point which they would have reached had they been kept going properly from the start. The making of baby beef is a continuous performance with shows 365 days in the ordinary year and 366 in Leap year. It is readily observable that there is no such thing as "warming-up" or "short-feeding" calves intended for the buyers of prime "baby beef."

Another thing to be remembered is that the age cuts little figure with the buyer if the meat and quality are not there with it. Baby beef to sell for paying prices must be a highly finished product. Therefore the man who sells cattle at a young age and before they are finished merely to get them onto the market at so many months old will cut his own financial throat in the transaction. Some one else will get his stuff, put the finish on it and get the profit. Cattle may be sixteen or eighteen months of age and afterwards warmed up a bit, but they will not class as baby beef and they will not bring the price of that article. First, last and all the time, the butcher who is willing to pay the price is after the flesh, the finish and the quality. If he can find it on cattle twenty months old or less he will buy it, but if he can not he will take it on older stuff.

In making baby beef it should also be taken for granted at the start that any discrimination against heifers in a drove is a waste of money. The buyers will pay just as much for the prime article of heifer beef as for the steer beef in the same load if the grade, the flesh and the finish are equal. Finally, too much emphasis can not be laid on the fact that calves intended for baby beef can not take care of themselves. They can not rough it and make prime yearling beef at one and the same time. They require better housing and roughage than mature cattle but they eat less and make greater returns for what they consume than older animals, and therein the profit lies. They must be well sheltered. It is not necessary to pamper them, but it is far better to err on that side than to utilize the barb-wire system which in olden days was alleged to make young stock tough.

## JUDGING ANGUS CATTLE.

*L. McWhorter, Mercer County, Illinois, in Breeders' Gazette.*

There is I believe a disinclination among those who are sometimes called on to act as awarding judges at our cattle shows, to give in print their views on their basis of judgment, even at the request of a popular editor of a popular live stock journal. This feeling is certainly shared by the writer. The reponsibility of making the awards is a heavy one and that of discussing it publicly is scarcely less so. In a recent conversation with one of America's leading breeders, whose ability as a judge is recognized on every hand, he frankly said he sometimes found himself in a position where he was satisfied as to the animal entitled to win but could not exactly explain why. There was no question in his mind as to the correctness of his award, but occasionally he found himself unable to justify himself with those at the ring-side. From this we are to assume that an intuition born of years of association with high-class cattle in all conditions and under all circumstances governed his judgment and directed his award. Now if on behalf of the beginners in the breeding business I attempt to portray the basis of judgment that in the mind of the writer should direct the course of the judge, I shall be compelled to deny myself the privilege of being equally frank and assume for the time being that the award may be backed up by the reason therefor.

In entering upon the duties of an awarding judge the main thought in the mind of the writer should, I think, be utility and adaptation to intended purpose, primary considerations being constitution, vitality, digestive capacity, type, breed character, conformation, quality, distribution, thickness and character of flesh, finish condition, style and disposition. In considering these various features one can arrive at a satisfactory conclusion at a glance on some points and with difficulty on others. Eternity is not half long enough to bring all minds to the acceptance of one table of weights and measues which shall estabish the proper rating of basic essentials which shall shape our judgment. Every year serves to bring the leading breeds of beef cattle nearer together and nearer to a common standard of excellence, so that the basis of judgment that applies and holds good with one breed to a great extent serves as a criterion of judgment with another and yet each breed has its distinguishing features which by its breeders are highly valued. In the case of the Angus a preference is given to the rounded formation rather than the more squarely built sort. We like all angles of the bony framework well laid in and are willing that the flesh should be proportionately more in evidence. They may be big or big little ones but we want them compact,

Speaking for myself, I will say I think more and more highly of a good head. It tells so much of what there is back of it. The head should be comparatively short and wide; the poll clean and well defined; the eye full, bright and prominent; the muzzle clean-cut and nostril large; the jaw deep and strong; a medium-sized ear well-haired and well-carried; an expression that combines animation with placidity and both with intelligence. I like these things. Why? Because all these features singly and collectively possess a special significance and prove an index in proportion to their possession to the requirements of the prize-winner. If to this sort of head you add a pronounced masculinity in the case of the male, an equally pronounced femininity in the case of the female and a pronounced individuality in the case of either, you have a head that not only insures it possessor the proper individuality but a capacity to reproduce its own excellence in its offspring. The neck, which furnishes only cheap meat, should not be too long; should come out from the top of the shoulder without a drop and in the case of the male with a full and well developed crest. Let there be a freedom from surplus leather about the throat in the female and the same in the bull, except to the extent necessary to give desired masculinity. Let this sort of a head on this sort of a neck be carried as though the possessor appreciated them and knew their value. A full bulging neck-vein should join the neck to a shoulder of ample width but points well turned in, crops well filled and not too open and all well covered. Going back from the shoulder a well sprung rib, a deep rib, and a well covered rib are next demanded. A straight, strong back, a thick loin of good width, a level quarter, long, wide and deep, unite in constituting the ideal top and when covered smoothly with thick firm flesh without hardness, without rolls, without patches, without soft loose blubbery fat, it becomes the top the winner should have.

The lower line is commonly given less consideration, yet its formation means much, as it takes a good foundation to carry a good superstructure. The thighs should be well rounded and twist well let down. A pronounced cutting in of the fore-flank is objectionable because it is a break in the desired nugget-like formation, because it mars symmetry, but most of all because it means a narrowing of the floor of the chest. A well-sprung rib with a wide chest floor insures ample space for lung-expansion and heart action. A defect here is a vital defect because here is the power-house of the beef plant and a shortage of power means a shortage in the output. A low flank is desired partly because it strengthens the underline and adds symmetry, but more particularly because more room is given for the unrestricted action of the digestive organs in the abdomen—the workshop of the beef plant. This sort of a carcass should be placed on short legs and straight legs with sufficient but not excessive bone. Let this sort of a carcass appear in a loose mellow velvety hide and a mossy glossy coat of hair and you have before you my ideal of Angus excellence. The ideal is somewhat exacting but one pleasing thought is that the breed is great enough to furnish so many cattle both in and out of the show ring that conforms so closely to this ideal. It is their ability to do this that sustains their supremacy as a beef breed the world over.

There is probably not much in the foregoing that is new to the older breeder or the experienced judge, but it is for the beginner and the amateur that this is written. There are, however, in the various combinations of excellence and defects, in the mixing of types, in the allowances for lack of condition and overdone entries, problems endless in extent and brain-racking in character that test the metal of the most competent and most experienced. We all easily reach the point where we are or should be students and not teachers. On the question of the two types met with in so many rings and their respective recognition the old hands mix up like beginners. I do not assume to say who is right and who is wrong, but I believe I have gone on record in the past as to my position in this, and while always open to conviction I have as yet not seen my way clear to change that position. All know we have these two types—the low-down, blocky, early-maturing handy-weight that comes fast for a couple of years and then quits and quits forever; and in contrast to this we have the big, smooth, massive, stylish ones that keep coming and give added profit from year to year. In the old days both the champion steer Dot and Black Prince of Turlington had thei ardent admirers. A welcoming hand is out to him who can bring out an Advance and a welcome just as warm awaits him who brings out a Shamrock. We need them both in our business. Both types have won and will win. Both types possess practical utility in their respective spheres of usefulness. We must have the baby beef that can be made quick on high-priced land with a grain ration from birth and grazing qualities not considered. We must have the sort that can profitably run one or two seasons on grass only, and follow that up by a profitable feeding period in the feed lot. The difference in environment in different sections of the country renders it imperative that a successful breed should afford high-class specimens of both types and we should be able to breed either type at will. With the Angus in the past we could do this; we can do it today, and we must be able to do it in the future.

Recognizing then the real value of and necessity for both types shall the judge, in order that he may at all times and in all quarters be termed consistent, turn down the best yearling in a ring of one type because he had placed the best animal of the opposite type first in the two-year-old ring? Or going further than this, suppose in the same ring there are two high-class specimens of opposite types, shall the judge throw out one top specimen for second place because he has placed first a top specimen of an opposite type and substitute an inferior specimen of a corresponding type simply in order that he may be termed consistent? I like an adherence to type in awards up to the point that one animal does not beat a better one. When one carries it to that point it is time to back up and think a bit, and for one, I question the fairness or justice of such an award.

Another point which may well receive the recognition and consideration of all is the matter of condition, and the extent to which it shall affect awards. It is commonly said the judge should take the cattle as he finds them and rate them accordingly; that the judge has nothing to do with the past or future of an animal; if the entry is lacking in condition turn it down; if the entry has had a bit too much of it turn it down. Up to a certain point this idea is probably correct, but I am of the opinion it should be modified somewhat. If a fresh one with light fitting—with lines about right (smooth, even and well turned), that shows the feeding quality to insure the proper outcome under fair treatment—appears in a ring, I find it hard to turn down. It is a poor rule that will not work both ways—almost in a single season of fitting and showing an animal may reach and pass the period of greatest bloom and most perfect show condition, and so if the deep, wide, thick, massive one—wonderful in type and conformation—shows a bit of a roll or a little letting down at some point, shall we turn it down because of this and place ahead of it an animal in perfect bloom but deficient in some vital point?

Bearing on the matter of condition in show cattle, particularly as regards our fitting and overdone entries, is the rule inaugurated by the management of the International that "'judges are instructed to award prizes for breeding cattle in the different classes in the order in which they as buyers for a valuable consideration and without warranty of usefulness would make selections therefrom for breeding purposes; due consideration being given on the one hand to the accepted maxim of breeding that like produces like and on the other hand to the doubtful utility for breeding purposes of overfed animals, not considering color or breeding." This excellent and carefully worded rule has been prepared for a most worthy purpose and for use in a show that in the mind of the writer outranks all others as a public educator. In three years successive work as a judge at this show I gave a certain amount of consideration to this rule and allowed it to have some bearing on awards but I have gone so far as to wonder what particular form of death would be dealt out to the judge who enforced it to the letter. In spite of this rule and all efforts toward reform in this matter the champion cow, shown as a breeder, is commonly in higher condition than the champion steer on foot and the champion steer on foot is commonly in higher condition than the steer that carries the champion carcass. It is not strange then that the question is sometimes asked why cattle in the breeding rings should be fatted beyond a point where it is possible for a fat steer to win. Whether this is as it should be, and if so, why it should be, is something worthy of the consideration of all. If it is not right just where should the reform begin—with the show management, with the judge, with the exhibitor or through concerted action? So far as the International management is concerned, it can consistently say it has made its play and it is now up to the judge and the exhibitor.

There is another matter the judge has to contend with and that is shall one animal be credited up with the advantages derived from skillful handling in the ring and another animal charged up with a lack of it? I shall never cease to admire the consummate skill with which some animals are shown—defects largely canceled, weak covered up and strong points kept ever in view. The animal that can not gracefully stand relaxation somehow will not stand still at certain times—well chosen times—and the necessary ''gingering up'' is secured out of the mix up. Other entries receive the necessary application of the skillfully worked ''Jack screw'' at the hands of a showman with an unconscious air whose mind is apparently on things ethereal rather than things worldy. In contrast to all this is the untrained animal unskillfully shown that is by no means doing itself justice. It seems a bit hard to take an overshown animal from the exhibitor and ''settle'' it before making an award, and it looks like a mark of partiality to hold back an award until an untrained animal is, after patient endeavor, made to square away and show right. To do either of these things throws a judge open to some criticism from the standpoint of the exhibitor of one or more animals in the ring, and yet some will say that the judge should pass upon the cattle rather than the skill with which they are shown. I sometimes think there should be two sets of awards, one for the herdsmen and one for the cattle.

There is, then, an endless series of problems, of complications, of combinations of each and both that confront the judge and add to the ''white man's burden'' in passing on the big rings that appear at the larger shows. Careful and presistent study on the part of all will be required to reduce these to the minimum. Probably many will remain unsettled and unadjusted. These I presume will be utilized in the future as in the past as a topic of ringside discussions and as a space-filler in the columns of our live stock journals. In this way they serve a useful purpose and we could scarcely do without them. They go with the business.

## WANTS A TWO DOLLAR SPREAD IN PRICE.

*Charles Escher, Sr , Carroll County, Iowa, in Breeders' Gazette.*

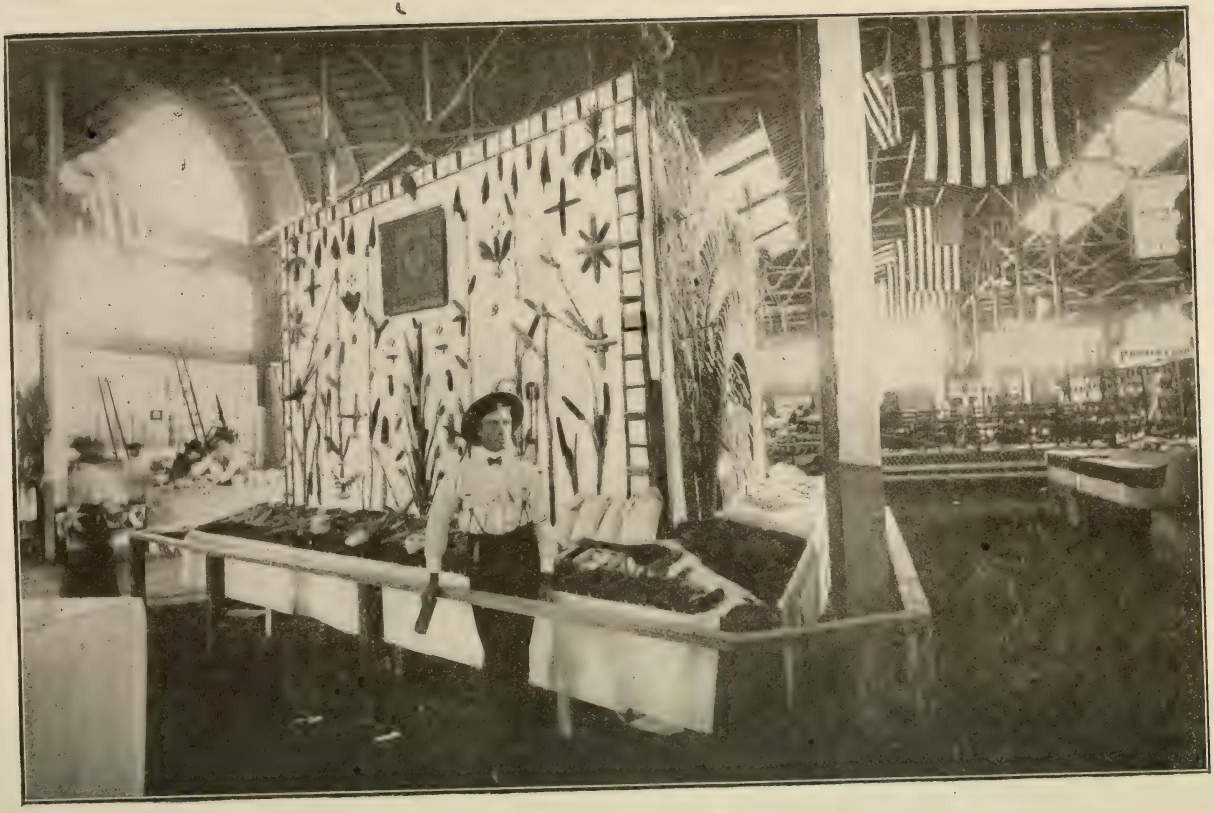
It is amusing to read the articles as to the outcome on the many bunches of feeding cattle recently sold. It reminds me of the man who went to town with an old wagon still good enough to last several years for all kinds of work, but he traded it off for a new one and paid enough to boot to buy a new one. Nevertheless on his way home he was so jubilant over his bargain that he told everybody how he fixed the fellow in town with his old wagon. Now this is correct as I met the man myself. And when I read some of these articles on cattle feeding, as also the results, it reminds me very much of the wagon deal.

It must be remembered that lots of these cattle are bought on the market and then shipped home at a cost of from ten to twenty-five cents per hundred-weight, which must be considered when shipping again for what we will call the final decision. As long as the man is in his feed lot with his cattle his talk as a rule is pretty loud, but when he gets to the stock yards it is seldom that the cattle are brought back.

I have handled cattle for the last thirty-five or forty years and know for a fact that the feeders of the State of Iowa for the last two years have lost millions of money. Where the cattle are bought on the market and shipped again the freight is from forty to sixty cents any way. When the shrinkage both times is considered, with corn from thirty-five to fifty cents a bushel, who can feed and hold his own with one dollar of a margin per hundred-weight as we have been compelled to take for our stuff for the last two years? I know of cattle which were sold for less per one hundred pounds than they were bought for as feeders, and all the man had in the deal was what the cattle gained and out of which two freights had to be deducted. Had this man not been a number one feeder his deal would have been lots worse than the wagon deal. But as he was a well-to-do farmer and had a good bank back of him he congratulated himself on his good credit. Now this matter comes mighty near home.

I was only too glad I had nothing to show at the International last fall as it was only too clear to me that the 126 cars of show cattle made a loss of $50,000. Now this is a large sum of money to lose, but I am just as certain about my assertion in this as can be, and those who had cattle at the International will bear me out in this.

In my feeding operations for thirty-five years I have learned that a feeder under present circumstances must have with freight counted $2 of a margin' per hundred-weight to make a living; otherwise he is the loser.



Artistic corn display, Iowa State Fair, 1904.

## SOME SUGGESTIONS TO CATTLE FEEDERS.

*Chas. O. Robinson, in Wallaces' Farmer.*

It is fully as important to know what not to do as to know what to do. In fact most of the mistakes in management and methods made by cattle feeders arise from lack of knowledge of conditions governing the varying demand for different classes and weights of cattle, hence in many instances they do the right thing but at the wrong time. The purpose of this article is to offer some suggestions which we hope may be found helpful in pointing out a few of the rocks in the feeders pathway and outlining a shorter and more direct road to the desired objective point. Being upon the market every day we have ample opportunity to observe wherein feeders err both in the feeding and marketing of their cattle.

For example, it is by no means unusual for a feeder to fatten a light weight drove of steers to come to market at a time when beeves of heavy weight are in most demand and the best sellers, or vice versa. This of course does not apply to yearlings, there being a steady and reliable demand for well fattened "baby beef" at all times and seasons. Perhaps the most common error is that of feeding heavy cattle into a hot weather market; that is, for shipment during the latter part of May and the months of June and July, when light handy-weight carcasses are required by the trade.

Steers scaling one thousand four hundred to one thousand five hundred pounds are good sellers any time between the first of August and the first of April, but during the last half of April and the months of May, June and July the handy-weights are most sought after and are the best sellers. Although a few loads of heavy cattle can be disposed of to fair advantage during the latter months the demand centers principally upon the light weights. A few years ago the export trade demanded cattle as heavy as could be had, but this is changed and the same conditions now apply abroad as in this country. While heavier cattle are used by the exporters during the winter months the last of April and forepart of May they begin to call for steers weighing one thousand three hundred to one thousand four hundred pounds.

Last June we received a consignment of steers that averaged one thousand nine hundred pounds on the market. They were of course entirely too heavy, and only one or two buyers could use them at any price. It is a law of trade that the less competition there is for any commodity the lower the price must be, hence feeders should diligently endeavor to cater to the demands of the market, thus insuring the broadest possible competition for their cattle. While the owner of the one thousand nine hundred-pound beeves alluded to above was producing them he could have fed and turned off two crops of steers, turning his investment twice instead of once, and, what is more important, realizing a profit instead of sustaining a loss, as there can be no money in producing cattle of the above extreme weight under present conditions. Our experience teaches us that short-fed cattle, as a rule, make the most money; that where good thin cattle weighing eight hundred to nine hundred pounds are bought during the months of October and November they can be carried along on fall pasture, cornstalks, and other cheap feed, until—say the first of March, feeding a little corn during

January and February to keep them gaining; then putting them on full feed about March 1st they could be finished to good advantage for the May, June and July market, at which time they will sell within fifteen to twenty-five cents per hundred-weight of heavy steers that cost fifty to seventy-five cents per hundred-weight more to produce. Handled in this way beef can be produced at a reasonable cost, and the feeder escapes a great deal of rough weather feeding during January and February, at which time cattle make little gain, as it takes most of the corn they eat to maintain animal heat.

Another plan which we think can be followed to good advantage is to buy half-fat heavy steers during September and feed them ninety to one hundred days. Cattle with weight can usually be fed the above length of time to make money. It is very important to buy for this purpose steers weighing one thousand one hundred and fifty to one thousand two hundred and fifty pounds, the heavier the better, as such cattle with one hundred days' feeding can be made heavy enough for export, whereas if a man starts in with steers weighing nine hundred and fifty to one thousand pounds he can only make them suitable for dressed beef purposes. In other words, with the same amount of feed and labor the heavier steers will bring twenty-five to forty cents per hundred-weight more than the light weights, because they will be suitable for the best paying trade.

By following the above plan a man can make two feeds per year, and utilize a great amount of cheap feed which would otherwise go to waste.

## CATTLE FEEDING.

*C. W. Carlson, Before Calhoun County Farmers' Institute.*

Among the different industries of this and other states, there is no one of more importance than the production of meats. The business of feeding and finishing cattle for market has been, and necessarily must be, one of exceptional hazard. The length of time necessary to manufacture the product and place it on the market, gives opportunity for a change in the demand of this product, and relative change of value. It is not pleasant to recall one's experience in the cattle feeding business of the past two or three years. However, in order to fully appreciate the trend of affairs for any definite period it is necessary in almost every case to go back over a series of years and note the changes, if any, that have been made, and the condition under which such changes were made.

That great changes have been made in all branches of farm industry is apparent to all who stop a moment and reflect on methods and conditions of fifteen or twenty years ago. The science of irrigation is today changing the western desert into beautiful farms, while drainage laws are opening up many acres of most valuable land here within our own beautiful State. Among all the advancement in agricultural states, there has probably been nothing of more importance in bringing about the changes noted, than the live stock industry.

If this be true, then it becomes apparent that such an industry must be protected against unjust discrimination that the law of supply and demand be allowed to govern the output of all products of the farm, in order that under normal condition, the market values should be on an even and steady basis, that the originator of the product can form a reasonable estimate of the profits of the business before beginning operation. I do not mean by this that all chances of loss should be eliminated. We all know that every business venture at some period will present a risk.

The one item above all others in the feeding business that affects the productive cost is the feed bill, the value of grains and grasses that are consumed (animal husbandry is only a method of condensing bulk into smaller packages). Consequently the values of lands as well as price of grain consumed must be considered as factors in the problem. There are two distinct methods of producing beef: One is the production of the finished animal by taking the calf, and continually using the forcing process until sold; the second, and the one mostly followed, is to grow the cattle for a certain period, usually two years, on grass and coarse feeds on the farm. After which they are placed on a grain ration for a length of time and made ready for the market. The first item then in the feeding problem is the cost of the steer at this period; second, the price of corn and other feeds used; third, what the steer sells for in the market. At this point the producer steps out of the problem to count his profit or loss as the case may be.

As great changes have been made in the industrial world, there have been equally as great changes made in the consumption department. A few years ago corn was the only fattening feed used here in the West. Now the feed yards and farms must handle all manner of by-products. Corn has become an article of necessity in the old world. The feeder of today must be able to compete with the export and manufacturing demand in the price of corn. A few years ago a feeder could buy his corn for fifteen to twenty-five cents per bushel. In recent years he has paid from thirty to sixty cents, or double the former price. When you know that a twelve hundred-pound steer will consume almost one-half a bushel of corn a day, or its equivalent, and that it takes from one hundred and forty to two hundred days and in some instances longer to place him on the market, you will realize that it costs something to make a fat animal.

The feeding season of 1902 and 1903 was a very unsatisfactory one from a financial standpoint. You can all recall the condition of the market at the close of 1902 and the season of 1903. Men of courage and skill put time, money and care upon the altar of good faith only to be sacrificed. Can you blame a man for thinking he is held up when he gets back only enough money to pay his corn bill, and has to lose the cost price of his steers and interest on his money. Nothing for his risk or loss by accident and death as well as his labor. And at the same time see this beef selling to the consumer at practically the same price as when he was receiving enough for his cattle to make him a good profit. The only wonder is that any one has the nerve to go against the proposition of feeding cattle. However, if we consider the condition of the market at the beginning of this period, you will say that it was only natural under the law of supply and demand that this crisis in the cattle feeding business should come. For instance, the year 1901 I find was a very profitable one in cattle feeding. I fed three loads myself which cost me as stockers, four cents per pound in the fall of 1900 and sold in Chicago at $6.40 at the close of 1901. In the fall of 1901, which was the dry year, on account of shortage of pasture as well as all kinds of feed, feeding cattle of good quality could be purchased at from three to four cents per pound. The following spring and summer those cattle, when finished for market, sold at prices ranging from six and one-half to eight and one-half cents per pound. Fortunately for me I purchased four loads of nine hundred pound cattle in the fall of 1901, which cost me three and one-half cents per pound. Wintered those cattle on roughness with a light ration of corn. The first of May they averaged 1,020 pounds, at which time I turned them on grass and began feeding ground feed, corn meal and corn and cob meal, with some oilmeal the last four or five weeks. The 18th of August those cattle sold for $7.15 on the Chicago market. Having gained a trifle over three hundred pounds in one hundred and seven days. This, however, is the largest gain I ever got on cattle for that length of time. Under average conditions a margin of one and one-quarter to one and one-half cents per pound over the cost of feeding cattle gives good returns. This being the case it is easy to understand the large profits to be realized when the margin is from two and one-half to five cents per pound as it was in many instances during that time and with hogs worth seven and seven and one-half cents per pound.

In the fall of 1902 a different state of affairs prevailed in the feeding cattle market. It was not strange, however, that an uncontrollable desire existed among cattle feeders to fill feed lots regardless of price. Many men on account of the very favorable returns secured by those who feed cattle during the previous year, when feeders were low in price and finished cattle the following spring and summer unusually high, decided to feed some cattle for the first time. Others by force of circumstances on account of the very large amount of unmarketable corn feed cattle for the first time. Under the most favorable conditions, many of these men would have failed as is always the case in any new line of work. Combine these conditions with unusually high prices for feeding cattle followed up by low prices for the finished animal and the results will as a general rule prove disastrous. On account of the drouth in 1901, many cattle were carried over which should have been fed during that year. Consequently an abnormal supply was available for the feed lots in 1902. However, feeding cattle which in 1901 could have been readily purchased at from three to four cents per pound found ready buyers in 1902 at four to five cents and some instances five and one half cents. These same cattle after being in the feed lot from four to ten months had to be sold on a low market. The quality of cattle that readily brought from seven to eight cents per pound in 1902, was a drug on the market of 1903 at from four and one-half to five and one-half cents per pound.

Unfortunately for me I put up fifty head of cattle in September 1902, at four and one-half cents per pound. They were on full feed October 15th and were fed until the first day of June 1903, under the most disagreeable conditions (on account of rain) I ever heard tell of. Considered myself very fortunate at that time to be able to dispose of them at any price, as I had lost all confidence in the cattle market for the time being. Sold them at home at four and one-half cents per pound. The cost price of the steers after being on full feed about eight months. Thus we can readily see that the extremely high price of well finished cattle in 1901 and 1902, followed us by inflated prices for feeding cattle could not prove otherwise than a disastrous thing to the thousands of men who fed cattle during the following year.

However, by all means do not lose faith in cattle feeding; in fact we can not afford to do so. Although we have the best soil upon which the sun shines in order to maintain its fertility in time to come it becomes absolutely necessary to feed cattle. And as long as cattle will eat grass and the human stomach likes beef there will be a profit in it for the man that makes a business of feeding cattle every year. But the speculator without experience who tries to get in on a large scale, when everything seems favorable, and reap a harvest will be sure to fail.

The question today is how to make feeding profitable and again secure for the business the standing lost during the two years past. The first step in this direction must be that of securing better bred animals. Mr. John Gosling of Kansas City in referring to this question says: "Remember that flesh is bred on animals, it can not be fed on, at least not to any great degree, and that fat is fed on." This coming from a man who is undoubtedly a master of the art gives great value to the opinion. You must breed for flesh, you can feed on fat.

The successful feeder must in the future look more closely to the quality of the cattle he secures for his feed lot. More attention should be given to the quality of sires used. The great amount of trash ordinarily seen at the market should cease to be, and the good ones made into a paying product. The difference between the good and poor was never more apparent than at the present time.

The past few years have seen a most wonderful advancement made in the methods of feeding and the combinations of grains that form the feeding ration. Our colleges have been of great assistance in determining many of those methods.

In considering the feeding problem from a standpoint of the one-fourth section farmer; would say that one car load of cattle per year is about the limit that can be safely and successfully handled on one hundred sixty acres of land. And in order to do this it is necessary to have almost one-half your ground in pasture and hay land. Ordinarily you can easily buy corn, but unless you have an abundance of good pasture and hay ground it is not advisable to undertake to feed cattle.

My experience is that the safest and most profitable method of handling cattle for the average farmer is to buy good yearlings in the fall. The very best are none too good. And do not hesitate if necessary to pay a premium in order to secure cattle of good quality. The most forcible factors in determining the profits of this work is the skill of the purchaser in selecting animals that will make good feeders. The skill lies generally in being able to estimate the possibilities of improvement in animals selected. You can generally buy yearlings at this time of the year about fifty cents per hundred less than two-year-olds of the same quality. Ordinarily you can carry those cattle until the first of January on fall pasture and stalk pasture with but very little grain. But do not hesitate to feed some grain if necessary. At this time, or whenever stalk pasture gets short, would commence feeding some grain once a day, always in the evening. About ten pounds of ear corn a day with plenty of hay. Clover hay, if possible, should bring a steer out in first-class condition to turn on grass. A steer that will weigh seven hundred and fifty to eight hundred pounds October 1st should weigh nine hundred or nine hundred and fifty by the 1st of May. It will take fifteen to twenty bushels of corn with roughness to produce this gain, but the steer will be in condition to make a good gain on grass. Would turn out on pasture about 1st of May, but continue to feed corn and hay for two or three weeks. Snap corn is the very best feed at this time. Would then discontinue feeding grain for about two months if the pasture is good; as I think the most economical gains are made on good pasture without grain. Would commence feeding some grain about the middle of July. From ten to fifteen pounds shelled corn; feed once a day, always in the evening, until new corn is in condition to feed. Would then continue feeding snap corn as long as the cattle will eat it readily without shelling the corn off the cob, which will be about the middle of November. Would then start them gradually on shelled corn; would also feed some oats. Think it is advisable to feed oilmeal the last four or five weeks, not over two pounds a day per head. If you have clover hay in connection with this I think you have a combination of feeds that are good enough without the use of stock foods and mill feed.

If your cattle have done well by the middle of January they will weigh about fourteen hundred or fourteen hundred and fifty, and if you used good judgment in selecting your feeders they will sell under ordinary conditions within forty or fifty cents of the top of the Chicago market.

Greater gains than this is possible. However, two pounds per day from the 1st of May, with this amount of grain is a very good gain. The cattle probably will consume sixty or seventy bushels of corn during the entire period of fifteen or sixteen months. By this method you obtain the greatest amount of gain possible on grass and roughness. During the past year I fed 100 head of steers following this method exactly and got an average daily gain of two pounds per head from May 1st until January 5th when they sold within thirty cents of the top of the Chicago market.

Fed fifty head in 1903 with equally as good results although a great deal of complaint was made that year about the feeding qualities of the corn. Made a longer feed that year than I intended with hopes for a better market which failed to come. However, thirty-eight head of those cattle sold March 24th at $5.35, fifteen cents below top for that day on the Chicago market.

I think that every progressive farmer in Calhoun county should and can profitably feed a limited number of cattle each year and by so doing keep your land up in highest state of production. And by frequently changing your ground from clover to corn and|using Professor Holden's method of improving your seed corn you can increase the yield of your corn thirty-five per cent.

And I firmly believe we will see confidence again restored to the feeding business of Calhoun county. And peace and prosperity once more control this the greatest industry of our State.

## DAIRYING FOR PROFIT.

*Henry Winter, Jr., Before Carroll County Farmers' Institute.*

Does it pay to milk cows? It certainly does if everything connected with the business is properly done and at the right time. In the first place you must have some good cows and it does not make so much difference what kind so they are good milkers.

I find that Shorthorns are the best all purpose cows. They are not the best milkers but there is something else to take into consideration. We must raise cattle that will sell on the market and Shorthorns will sell any time and at any age. Jerseys are the best milkers but it is a hard matter to sell the calves.

The milking should be done regularly morning and evening. I try to have my cows fresh in the winter as butter brings a much better price then than in the summer. I am getting twenty-seven cents a pound at the present time in Chicago and after deducting the expense of shipping it clears nearly twenty-five cents a pound but do not get as much in the summer, about eighteen or twenty cents which of course is not clear gain.

I make about forty dollars annually on each cow from butter and it cost about twenty dollars a year per head for feed and pasture. I get from eighteen to twenty dollars per head for steer calves when they are yearlings and about fourteen to sixteen dollars for heifers at the same age. There is also some value in the skim milk for pigs.

So I think I am safe in saying that my cows clear thirty-five dollars per head and still have the cows left, but of course this does not all come by folding one's arms. As in everything else there is a great deal of work about it. In order to get the best results from the milk it is necessary to have a cream separator and then the cream must be handled right to make good butter.

It pays better to sell butter than to sell cream, that is after you work up a trade, get the cash every week and pay for what you buy. I feed as a ration in winter ground corn, oats and corn fodder, timothy or clover. At the present time I am only milking six cows and they more than keep a family of five.

As a side issue I think it would pay any young farmer just starting out to get a half dozen good milch cows or more and attend to them right. He would find out at the end of the year that he would have a fatter pocket-book and his good wife could dress better and set a better table.

# HORSES.

## THE PROFIT IN DRAFT HORSES.

*Wallaces' Farmer.*

Farmers who have kept right along growing draft horses through good times and through bad have always been money ahead, and always will be. We know ''always'' is a long time. Inventions may be made in the future that will do away with the horse altogether, but the chances of this are so small that they can very safely be left out of the account. First-class horses are now bringing prices that make farmers who have them to sell rich and if the farmer will just keep on breeding along right lines and limiting the colts that he raises to the number of brood mares that can be used profitbly on the farm he will be a sure winner every time.

Few farmers realize how cheaply a weanling colt can be developed on a first-class farm to his three-year-old form. It costs no more to keep a weanling colt two years than it does a weanling calf. In fact, the colt can be kept cheaper than the calf. Both will require some grain the first winter, and will be better with a little grain the second winter, but the colt will develop on a winter pasture of blue grass or second crop clover and on the forage on the farm to a good deal better advantage than the calf and can be fitted finally for the market for one-half the money, and if the right kind of a colt will sell for twice as much money as the calf or steer. The main difference between the cost of a fat steer and the three-year-old draft horse is in the cost of the service.

You can not keep an ordinary cow for the chance of an ordinary calf. Neither can you keep three brood mares where two horses would be sufficient to do the work and on an average raise two colts from the three mares.

The important thing is the breeding. It does not pay to grow a scrub colt, even if the land is worth only $20 per acre. Neither does it pay on that priced land to grow a scrub steer. The best style of horse for the average farmer to raise is the draft, and it does not matter much whether he use Norman, Shire, Clyde, or Belgian sires. The quality of the sire counts for a great deal more than breed. The care the colt receives during the suckling period, and especially from weaning time onward, counts almost as much as does the breed. Our advice to farmers during the winter is to make arrangments for the service of the very best possible sires of their preferred breeds. The best sires are not always those which cost the most money. The breeding quality of the sire does not increase with the price you pay. The addition to the price by commission or profits makes no addition to the heredity which he is disposed to transmit.

We believe in the organization of horse companies when organized by farmers themselves and when horses are bought judiciously. It is, in fact, about the only way in which in the average neighborhood the services of a first-class horse can be secured. Let the farmers make arrangements in some way to be within reach of first-class sires. Breed the mares for which you can find work on the farm, discarding all that have any hereditary unsoundness, take proper care of the colts during the suckling period, give them the right kind of feed and enough of it from weanlings onward, and do not worry about the automobile or any other newfangled invention ever taking the place of the draft horse. There will always be a market for them both in this country and abroad, and there has never yet been a time when there were too many good ones.

Let the farmer figure out how to raise the good ones and pay no attention to the probable price three, four, five or six years hence, when they are fit to go on the city market. Sound political economy requires the draft colt to be put to work when two years old, kept two or three years on the farm and he is then fit for service in the city. When our horse industry is put on the proper basis the farmer will raise the colt until he is three years old and sell him to some other farmer who does not care to raise colts but who can give them proper farm work until they are fit to go on the city market at a price in advance of that which he originally paid. He can thus get his work done on the farm for the interest on the money plus the risk of injury.

Before, however, we can grow even draft horses to advantage, we must get the farm fenced with something else than barbed wire fences. The damage to horses alone on the farms in the west for the last ten years would pay two or three times bank interest on the difference between the cost of barbed wire and a woven wire fence.

## ACTION IN HORSES.

*F. C. Grenside, V. S., New York County, N. Y., in Breeders' Gazette.*

The character of the action is a very important factor in determining the amount of wear and tear a horse will stand. The acquisition of a knowledge of action, or in other words, to become a good judge of action, is not such an easy matter as might be imagined. There are many who have a good eye for a horse, and in fact are in a measure good judges, who can not intelligently criticize a horse's action from different standpoints.

There are many who are taken with flashy action. Flashiness of action as a rule enhances the market value of a horse that possesses it but it is very apt to be associated with greater defects from a utilitarian standpoint than that which is less attractive. In estimating the quality of action correctly in different individuals one has to have an ideal. How seldom in sitting behind a horse and closely observing his way of going, at the trot and walk, do we find action that comes up to our ideal. Perfect action, as far as usefulness is concerned, is frictionless and light, and the foot is placed on the ground squarely. There is no loss of time or power in progression, or in other words, the frictionless mover does not labor, neither does the light stepper experience the ill effects of concussion, the result of bringing the foot to the ground in a pounding manner. What a saving of wear and tear and power the smooth mover and light stepper experience! One is amazed in instances to observe how much work a weak-footed, poor-legged horse will stand and still remain in workable condition; but it can be accounted for in many cases by the defects mentioned being compensated for by light action. It is interesting and instructive to study the numerous and varying conditions that conduce to defective action. Lightness of step appears to be a quality not always dependent upon the conformation of the individual. For instance, length and obliquity of the pasterns are usually said to cause lightness and elasticity of the tread, but do not always do so, for we find many heavy-going horses of this formation. Mechanically this formation should conduce to light-stepping, and does in a measure, but the fact that horses with oblique pasterns sometimes pound, leads us to look for another explanation. The statement may be advanced in explanation that the elasticity resulting from oblique pasterns may be neutralized by a straight shoulder; but this theory will not hold, as one not infrequently finds straight-shouldered, short-pasterned horses that step lightly. Another explanation has to be found. We have to seek elsewhere in the animal economy than in the peculiar arrangement of the bones, muscles, tendons, and ligaments of the limbs to account for the light step of some horses.

The endowment with this desirable quality is undoubtedly referable to the nervous system, just as speed is. We can not determine the degree of a horse's speed by studying his external form. We have to subject him to a test, and so we have in forming a conclusion, as to the degree of lightness or heaviness of his step.

With regard to labored progression the tendency to it is usuallv determinable by an inspection of a horse's conformation. All deviations from the steadily-carried top in the trot, in which there is no rolling, jerking or waddling, and from the straight-flexion extension of the fore legs, in which there is no straddling, dishing or winding in, and to the equally straight and easy flexion of the back, can as a rule be determined by an examination of an individual's conformation. The horse with thick or loaded shoulders and wide chest is apt to roll; the one that stands with his fore feet placed wide apart straddles, the knocked-kneed one, as well as the one that toes in generally dishes, while the horse that toes-out winds-in. With the hind legs the cow-hocked horse usually swings his legs in a circumductive manner outwards. The horse with his hocks wide apart and feet close together "screws" his hocks outwards and usually "plaits." When the hocks are placed behind instead of under the quarters there is likely to be a dragging movement of the hind legs. Defective conformation of the legs then shows itself with almosts unvarying regularity in its effects upon the action.

In order to have the straight undeviating action a horse must flex and extend his legs during progression in a line parallel to the long axis of the body. The knocked-kneed bow-legged or even calf-kneed horse can not do this, and consequently experiences the ill results of loss of time and power in progression.

Apart altogether from the question of the degree of the lightness or heaviness of the step, the manner in which the feet are placed on the ground has a great influence in determining wear and tear, and is consequently an important point to study. The horse that toes-in usually has the inside quarter of his fore feet defectively developed, which becomes more marked, if he is not rationally shod. The defect of formation of the inner quarter consists in the slanting off of it from before backward and outward and from above downward and toward the center of the foot causing this quarter to assume a wedge-like form, and literally to act as a wedge between the shoe and the sensitive part of the inner quarter, thus predisposing it to bruising. In addition to this, the horse that dishes usually brings his foot down with force on the inner quarter. This manner of planting the foot not only subjects the ligaments to undue tension but is a fruitful source of troublesome corns.

On the other hand, a horse that toes-out is apt to come down with most force on the outside of his foot. This is a much more defective formation than the former, for it not only causes winding-in and great liability to interfere, but the planting of the foot is usually accomplished in a manner that results in the production of considerable concussion, and also subjects the ligaments to great tension, so that the legs soon begin to show the effects of wear and tear. Some horses come down with most force on their toes, causing them to stub their toes, as it is called. Such a manner of planting the foot is apt to cause stumbling and increases concussion to a marked extent Short-pasterned straight-shouldered and short-gaited horses often show this defect.

Just the opposite manner of planting the foot or coming down with the heel first is not at all uncommon. This defect of action is not only likely to cause bruising of the heels, but subjects the tendons and ligaments at the lower and back portion of the forelegs to excessive strain. Ordinarily this imperfection is only observed in long-gaited horses, but some horses that plant their feet in a favorable manner when going at a slow pace, when forced to a faster one lengthen their stride and show this defect, often called pointing, to a pronounced degree. Deep and oblique-shouldered horses with little knee action, like thoroughbreds, often go in this way, but its ill effects are not so great as in those with a considerable amount of knee action.

Threading or plaiting are terms used to designate the swinging of the elevated foot around the one that is placed on the ground in progression. This ungraceful manner of going, which occasions a loss of power, a tendency to brush and liability to trip, is most clearly shown in the walk or slow trot. The horse that plaits is usually either a narrow-chested one or one fairly wide in the chest, that stands with his feet very close together. This conformation is the opposite to that found in the straddler, and of the two evils the latter is the greater, for it gives rise to a stilty way of going and a manner of putting the feet down which is very injurious to the legs.

While it is the intention of this article to endeavor to picture ideally good action by which wear and tear and loss of power are reduced to a minimum, it is not intended to decry the possession by a horse of what is usually called high action for certain purposes. To render horses attractive for show and for pleasure purposes, it is a highly desirable quality, and very much increases their market value. The good horseman would much prefer, however, to sit behind a horse with moderate action that raises his feet, advances them in a straight line, with stride enough to insure desirable progress and not so much that the feet can not be put down squarely, every part bearing its proper proportion of weight and striking the ground lightly, than one with excessive but marked defective action. High action, like other qualities possessed in a high degree, is very apt to be associated with defects that detract from its perfectness and lessen a horse's wearing ability. The ill consequences of these defects are intensified in direct ratio to the excessiveness of the action. The craze for high action at any cost is not so rampant as it used to be some years ago. Horse show promotors became wearied of seeing their premiums for action carried off by acrobatic montrosities, and it caused them to modify the wording of their prize lists and call for all-around goers with 25 per cent for conformation.

The horse that winds his legs about, straddles, points, rolls, spreads behind, waddles or drags his hind legs, is no longer in favor with the good judge, no matter how excessive his action.

## QUALITY IN HORSES.

*F. C. Grenside, V. S., New York County, New York, in Breeders' Gazette.*

There is no subject upon which there seems to be more diversity of opinion amongst horsemen than as to what constitutes ''quality'' in a horse.

It is a term in very common use, but if you ask a number of horsemen what they mean by it you are sure to get a variety of answers. One will say it means breeding; another, conformation; another, finish; another, "class"; another, symmetry, individuality or perhaps a combination of some or all of these attributes. Some say that quality is recognizable but indefinable and unexplainable.

The term ''quality'' is an abstract one, indicating a special attribute in an individual, just as being well bred, well conformed and possessing finish are attributes of some individuals. When one says that a horse has ''quality'' one means that he has a special attribute which may or may not be combined with any or all of the others mentioned. Of course there are varying degrees of ''quality'' so that the term can only be used in a comparative sense. In the light classes of horses it is very often used synonymously with breeding. Certainly the more warm blooded a horse is the higher the degree of quality he is apt to possess, but one may take two well bred thoroughbreds and find one showing evidence of the possession of a higher degree of quality than the other so that breeding and quality do not mean the same. Neither does quality signify the possession of symmetry, good conformation, finish or ''class.'' A horse may be very defective in any or all of these respects and still possess a high degree of ''quality.'' He may be fiddle-headed, lop-eared, ewe-necked, sway-backed, flat-sided, slack-loined and cow-hocked and yet show much ''quality.''

Much confusion is caused by using the term "quality", synonymously with "class." Horses are spoken of as of high class, medium class and so on, indicating the degree of excellence which they possess for the purpose for which they are best suited. Two individuals can be taken as an example, showing equal ''quality'', but one of them, on account of better conformation, more style and action, may be worth twice as much as the other, consequently he is a higher-class individual, although the two are equal in "quality", so that ''quality'' and ''class'' do not mean the same.

If, then, ''quality'' does not mean breeding or conformation or symmetry or finish or ''class'' or a combination of any or all of these, what does it mean? It is an easier matter to explain what constitutes "quality" than it is to give a concise and at the same time comprehensive definition of what it is. It may not inaptly be defined as fineness in contradistinction to coarseness. How frequently one hears a prospective purchaser say to a dealer: "He is a very nice horse, but very light in bone." The dealer almost invariably replies: "Yes, but his bone is of good 'quality,' " and still further endeavors to make the statement more emphatic by saying that the bone is so dense, so compact, so ivory-like that a cubic inch of it will weigh more than a cubic inch of some other horse that has indisputably more bone. It is a fact that the bone of some horses is much more dense or compact, and is as the dealer expresses it, of better "quality" than that of some others.

What causes this greater density in the bones of some individuals than in those of others? We have to look to the elements of which bone is composed for the determining cause. The animal tissues are made up of fluids and solids. The solids are composed of three simple elements, viz: granules, fibers and cells that are only determinable by means of the microscope. A high-power microscope reveals a difference in these elements in different individuals. This is most easily determinable with regard to the element fibers. The fibers that form part of the tissues of an individual of high "quality" are more slender, more compact and tougher than those of one of less "quality." One can appreciate this, even with the naked eye, in examining the wall of horses' hoofs. In a horse possessing a fairly high degree of "quality" the fibers which run from the coronet down, in forming the basis of the wall, are most palpably finer than in those of the wall of a coarser individual. So with the bone, the elements that combine to form it in a horse of high "quality" are finer and more highly organized than in those of a coarser individual.

What you find with regard to quality in the bones of an individual, you find pervading all the tissues of his organism. You do not find a horse with coarse bone and fine skin or coarse skin and fine bone. If the bone is fine or has "quality" in an individual the muscles, tendons, ligaments, skin, hoofs, hair and all the other tissues which enter into his composition are equally fine or are of equal "quality." The "quality" of a horse's bone may be perfect, but undue or disproportionate length or other defective form or faulty relationship of one bone to another may make his conformation very imperfect indeed, so that it is difficult to understand why some horsemen think there is any relationship between "quality" and conformation.

A high degree of "quality" is apt to be associated with defects, or one might almost state that a horse can have too much quality. Size or, more correctly, substance is strength, other things being equal. A horse with a high degree of quality may be so lacking in substance as to impair his power for the performance of work or severe tests of endurance or speed. He may be so light-limbed that he can not stand the "wear and tear" of hard work and remain practically sound. We often find horses that are superfine with disproportionately small feet and every experienced horsemen knows that it is seldom that such horses can do much work and remain sound. A horse, however, can not have too much "quality," providing it is combined with sufficient substance for the purpose for which he is required. A high degree of "quality" and sufficient substance are most important attributes in contributing to perfection in horseflesh.

There are many everyday evidences of the ill-consequences of deficient quality in horseflesh. You hear a horseman say that a horse has soft legs and he points out an individual inclined to fill about the skin of the fetlocks to show windgalls which extend up the sheath of his back-tendons, and whose hocks are inclined to be puffy throughout. If he gets a bruise or injury of any kind to the skin of his legs the consequent swelling is apt to extend and is inclined to remain. Abrasions, cuts, cracks and scratches heal very tardily. Concussion and direct injury to bone are very much inclined to result in bony enlargements, such as splints that spread out and have not well defined limits. Standing in the stable too much readily produces stocking of the legs. There is a predisposition to greasy legs. Feet are inclined to be flat, large, easily bruised and horn is brittle.

These tendencies show coarseness of tissue and low organization, a meager blood supply and inactive nutrition. Horses with "quality" also develop wind-galls and splints, if subjected to sufficient cause, but their character differs from those of the coarse horse in being clean cut and well defined and not having the same tendency to spread out. A horse with quality may have a bog-spavin, but it will show as a well defined prominence and not as a round puffiness of the hock throughout.

Draft horsemen talk "quality" just as much as or more than those who have to do with the light breeds. The difference in the "quality" of individuals of the draft breeds is just as well marked as in the light breeds. Take for instance a Clydesdale or Shire, either of which will have a considerable quantity of long hair on the back of his legs which is often referred to as "feather." If this hair is found to be fine and silky, not coarse and wiry, you will find it possessed by an individual that shows "quality" throughout. His skin will not be coarse and beefy, his legs will be fluted, his bone will have a tendency to flatness, showing density of structure. The hair of his mane and tail will be fine like that at the back of his legs. The eminences and depressions formed by the bones of his head will be comparatively finely chisled. He, in fact, shows "quality" when compared to other members of the same breed that are equally well bred as far as possessing the characteristics of the breed and as far as the studbook is an indication of breeding. This is a further example of the fallacy of the view that "quality" and breeding are the same thing.

# SWINE.

## SELECTING BROOD SOWS.

*Chicago Daily Drovers' Journal.*

On the majority of farms there is ample evidence that a geat deal more care can be observed in selecting breeding hogs, and particularly the breeding sows, than is usually exercised by farmers and swine raisers. This observation is not intended for the benefit of the breeder of pure-bred hogs, but for the man who is raising pork for the market. The former realizes the importance of selection, and the fact that only through this means can he secure uniformity and the other necessary qualities of good breeders, but the common hog raisers fail to appreciate the importance of using the same judgment and discrimination as with high-class swine with hogs used solely in producing hogs for the market demand.

One of the present great demands of the market is for uniformity. Not only does the evenness include the exterior appearance, but the interior organs as well. In fact, the modern demand is for the animals that are uniform all through. To secure these results it is necessary for the hog raiser to use discrimination in culling his sow stock, that the litters may be uniform, and as near as possible conform to the demands of the market. In a large measure the hog raiser can secure this uniformity only in the even appearance of the drove, but he may rest assured that if he takes care of this feature he will have no need to worry about internal uniformity.

As a general proposition, the problem before the hog raiser is to secure and breed the type that is prolific, productive of early maturing and easily fattened hogs of the common, blocky, low-down conformation that the packers are seeking for continually.

In placing the awards in the swine carcass contest of the International Live Stock ·Exposition, the judge, in commenting upon his work after awards were made up, made this statement in substance to a representative of this paper:

''What the packer wants is a medium-sized, small-boned, thin-skinned, fine-grained animal. A hog with a small leg and foot comes close to what we want, as this type generally represents a hog with the above requirements, set close to the ground. In short, the best hog is the one that dresses out the largest number of pounds for its live weight.''

In a few words, this is one of the strongest expositions of the desired characteristics of the first-class market hog that we have been privileged to print in many a day. It is safe to say that the man who brings this type of hogs to market will have little need to worry about the top of the market. These are what buyers are ardently looking for continually.

In the case of a man starting into hog raising, it is important that he start right. It will be far wiser for him to buy a few sows that are right than several that are seriously lacking in the qualities that he is seeking for. This advice will apply equally well with the farmer who is beginning with well-bred grade sows as for the breeder who is buying pure-bred registered stock, where he is naturally expected to seek for uniformity.

With the hog raiser of years of experience, anxious to improve his stock, there are two courses that are open to him. One is to sell off his entire lot of breeding sows and start again, or else keep his own stock and by careful breeding, culling and selecting gradually raise the standard of his stock until he brings it to the level that is consistent with his ideal.

In both of these instances it is important that the farmer should know what a good hog is. The remarks of the expert who judged the hog carcasses at the International Live Stock Exposition this year show in a few words what the finished hog should be when he is brought to market. Since it is generally reasonable to assume that "like begets like," it is not too much to expect that the same type that the packer wants to find at the stock yards, must also figure prominently in the general style and make-up of the sire and dam.

In good market breeding brood sows there are certain well-defined characteristics that must be constantly kept in mind. In discussing this subject in the last report of the bureau of animal husbandry, George M. Rommel gives this description of the leading characteristics of a good brood sow, so far as it may be judged from physical appearance. We quote as follows:

"The forehead should be broad between the eyes, the throat clean and trim, the neck moderately thin, and the shoulders deep and smooth; the back should be fairly wide and straight, and ample room for the vital organs should be provided by a good width and depth of chest, well-sprung ribs, straight, deep side—a deep, capacious body from end to end."

A good sow has a deep chest and a liberal abdomen. A pinched effect in either of these organs is to be avoided. A good length of body is generally advised by leading breeders and hog raisers, but there is no evidence that additional measure in this section means greater fecundity or prolificness. While there can be no hard and fast rule in selecting sows that are long-bodied, it is advised that care be observed to see that other good qualities go along with this characteristic.

The experience of many breeders is to the effect that there are good breeding sows in both the long-bodied and the short-bodied type. It seems to have been equally well demonstrated also that both include poor and indifferent breeders. We can see only one objection in continually selecting the long-bodied sow to the exclusion of all others, and this is the possibility of ultimately developing an animal of the long-bodied, coarse-boned, loosely put together type. In such an event the purpose of good breeding to bring out a better market animal would have largely been for naught, inasmuch as there is very little in coarseness of such hogs to commend them to the attention of exacting breeders or discriminating buyers.

When one has the sow the next consideration is the breeding. We have no hesitation in saying that herein lies, in our estimation, one of the most palpable errors of the modern pig raiser. This is too early breeding of the sows. It is a well recognized fact that an animal must have reached maturity before it is in possession of its breeding organs in their normal strength. When sows are bred while they are yet pigs, and their produce is similarly handled, and this policy is maintained year after year, it is too much to expect that the breeding material in the drove of hogs thus treated should be improving. As a matter of fact, it does not, but is constantly deteriorating.

Sows should be from ten to twelve months of age when they are bred, as a general proposition. If they are of a strong and vigorous type, possessing remarkable vitality, perhaps a younger age will answer a good purpose. In any event, the sow should give evidence of having developed sufficient maturity to endure without injury to her health or bodily vigor, or impair the innate strength of her progeny.

Obviously it is impossible to select first-class sows from the physical appearance. There is the temperament that must be taken into consideration. There are some sows that are so constituted in disposition that, whatever their physical recommendations might be, they are unfitted for the rearing of litters. A hog must be such that it may be handled without danger to itself, the litter, or the owner. It will be apparent that a typical sow would be quite useless were it too ugly and careless to raise its own litters.

Another important thing is the prolificness of the sow. We know of no means to determine this point other than by test. The record if properly kept, will not only show what each individual sow can do, but what her ancestry has been able to do. It is important that the sow be capable of raising good litters, but, fundamentally, the capacity of producing them comes first.

It is true that the boar is half the drove, but the breeder must not forget that the sows are the other half.

## THE YORKSHIRE HOG.

*James Atkinson, Des Moines, Iowa.*

Twelve years ago the first improved Yorkshire hog was introduced into the United States, and at the present time there are six thousand two hundred animals recorded, with a large number of imported animals that are on record in England and Canada. The breed had its origin in Yorkshire, England, though it is now largely distributed throughout Lincoln and Leicester counties, while it is at present the most popular breed in Canada.

Compared with the so-called lard hogs, the Yorkshire is somewhat longer in the body and slightly more leggy. The breed as a whole is characterized by having uniformly strong bone, though it can not be called coarse. The manner in which this breed has been handled for a half century or more has resulted in imparting constitutional vigor in a marked degree. From this strong constitution and long body we naturally expect that the sows will produce large strong litters, and this I find to be the case. Mr. Thomas H. Canfield, of Lake Park, Minn., who is the most extensive breeder of Yorkshire hogs in America, informs me that in 1904 his thirty-six sows averaged eleven and one-third pigs per sow. These pigs were farrowed by sows weighing from five hundred to seven hundred and fifty pounds. Nine of my sows farrowed during the month of March, of this year, and produced ninety-one pigs. Four of these were yearling sows and five were gilts. The entire ninety-one came into the world active and strong, while not in a single case did a sow experience any difficulty in farrowing.

I consider that large litters and ease of farrowing are the result of two causes, namely, strong constitutional powers, and secondly, the activity of the sows. I am often asked if the Yorkshire is not a comparatively wild hog, and my reply to this is, ''decidedly not.'' On the other hand, the sows, even when they are heavy in pig are very active, and I have seen sows weighing five hundred and six hundred pounds spend almost the entire day tramping over the pastures. That they are not wild is indicated by the fact that from experience I have found that a twenty-six inch woven wire fence will hold everything but the males at all times.

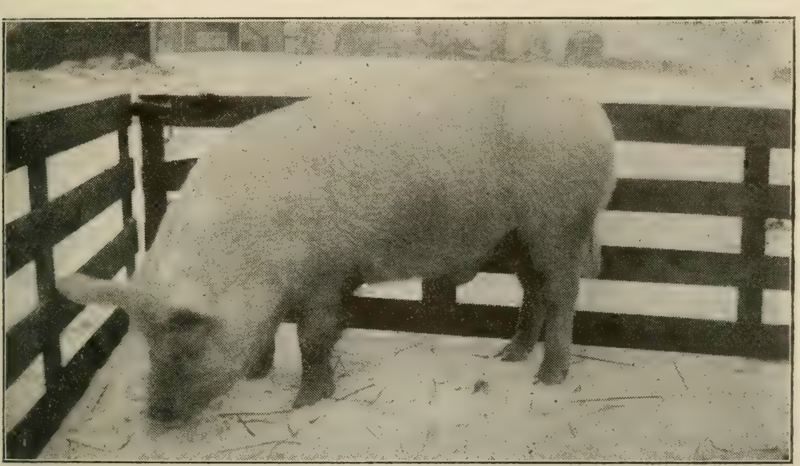
But after all it is what the Yorkshire can do in the making of pork or bacon that we are primarily interested. On this point I will say that I have had no difficulty in bringing Yorkshire barrows to a weight of from one hundred and fifty to one hundred and seventy-five pounds at from six to seven months, this being largely done on pasture with a small amount of slop daily. At this weight they are in about ideal condition for bacon hogs, though I do not believe this is a profitable weight at which to sell. If carried forward they can be made to weigh from two hundred and seventy-five to three hundred and twenty-five pounds by the time they are ten months old. I find at this weight that they are smooth and very popular with the buyer. They show little superfluous fat around the neck or on the belly, and because of this they must necessarily dress out economically.

**First and Second Prize Winners, Improved Yorkshire Sows in Aged Class, World's Fair, St. Louis,**

Of course at nine or ten months, even though they weigh three hundred pounds, they will look somewhat more leggy than the fat hog and expert hog buyers who have never handled the Yorkshires can scarcely ever estimate their weight within twenty-five or thirty pounds. I have in mind one bunch averaging three hundred pounds that were estimated at two hundred and sixty pounds by the buyer.

Official weights taken at the World's Fair, St. Louis, give a fairly clear idea as to the possibilities in the matter of scale of the Yorkshire hog. A boar six and a half months old weighed two hundred and sixty-five pounds; boars and sows twelve and a half months old, five hundred and sixty pounds; sows fifteen months, old, five hundred and eighty pounds, three-year-old sows, eight hundred and seventy and nine hundred and ten pounds respectively.

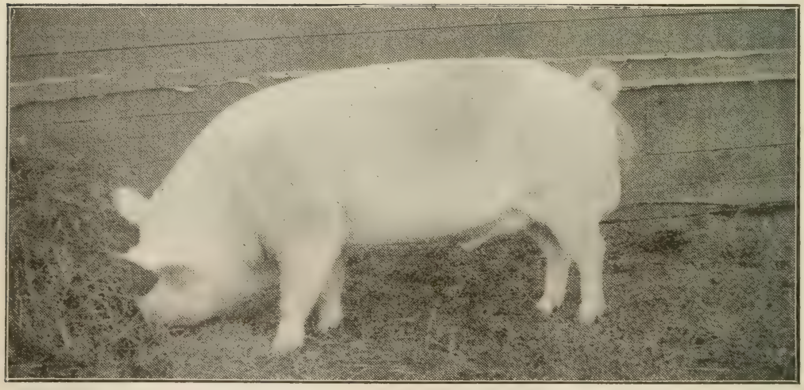
I find upon referring to feeding experiments conducted at some of the stations that the Yorkshire's record is a creditable one. Three separate feeding tests, for example, were conducted at the Iowa Station in which the Poland China, Duroc Jersey, Berkshire, Chester White, Tamworth and Yorkshire hogs were used. According to the summary of these three experiments the Yorkshire hog cost $1.14 per hundred pounds gain, the Poland China, $2.23 per hundred; Duroc Jersey, $2.27; Berkshire, $2.33; Tamworth, $2.42; and the Chester White, $2.46 per hundred. In these experiments the Yorkshires made the largest average daily gain of all breeds. At the Ontario Agricultural College it was found, in tests carried on for a period of five years, that less meal was required to make a hundred pounds of gain on the Yorkshire than in the case of the Poland China, Duroc Jersey or Chester White. In experiments at the Minnesota Station in which the Poland China, Tamworth and Yorkshire were fed out, it was found that the profit during a certain feeding period was $2.07 on Large Yorkshire and only eighty-six cents on the Poland China. In the second experiment conducted with these same breeds the average profit on the Yorkshire was $3.40, while on the Poland China it was $2.58.



First prize six months improved Yorkshire Boar World's Fair, St. Louis.

The Minnesota and Wisconsin stations found that a Poland-Yorkshire cross or a Yorkshire-Berkshire cross produced a hog that would feed out a given weight more economically than any of the pure bred fat breeds, this no doubt being due to the increased constitutional vigor imparted by the Yorkshire blood.

To sum up the matter, I will say that while the Yorkshire is generally looked upon as the ideal bacon hog, yet it is not as such that the breed is adapted to Iowa conditions. With the splendid constitution and large frame I consider that there is furnished a most excellent opportunity to the skillful feeder who desires to make the greatest possible weight in a short time, and unless one is located so that he has access to a bacon market where a premium of twenty-five or fifty cents per hundred is paid, it will certainly pay to carry even the Yorkshire hog to eight or nine or possibly ten months and to feed a heavy corn ration during the last two or three months. However, I would not advise feeding corn exclusively, as I think that a little mill feed, tankage and oilmeal fed in the form of slop can be used with profit, not only with this breed but with all breeds; because under such treatment a fattening hog really seems to get more benefit from the corn consumed.



**First prize improved Yorkshire Junior Yearling Boar, World's Fair, St. Louis.**

# RAPE WITH GRAIN FOR HOGS.

*Chicago Daily Drovers' Journal.*

It is already time that the farmer had some definite plans relative to the source of feed for hogs for the coming season. We are referring particularly to green feed, which is so easily grown and may be made so profitable in keeping hogs in good condition. Added to the advantages and the physical effects upon the hog is the increased gains in weight when the hogs have some green feed in connection with their grain ration. There is no better green feed for hogs and none that can ordinarily be sown and grown more advantageously. We have in the past advised our readers to investigate the properties of the rape crop, and know that some have been happily surprised.

Considerable work has been done with rape at the stations and generally satisfactory results have been realized. Some of the best and most thorough work, however, has been done at the Wisconsin station under the direction of Carlyle, who selected two groups of four-month-old pigs of similar breeding and put them on a grain ration, but one lot was given the advantage of a rape lot. The work was commenced in August, when the rape stood about twenty inches high. The following table shows the original weights of each lot, together with the total amount of grain eaten during the trial by the two lots:

| | Total Weight at Beginning. Pounds. | Total Weight at Close. Pounds. | Grain Eaten. |
|---|---|---|---|
| Without rape | 1,017 | 2,211 | 5,642 |
| With rape | 1,001 | 2,412 | 5,920 |

At the beginning of the experiment the pigs on the rape lacked sixteen pounds of being as heavy as those on grain alone, but at the end of twelve weeks feeding the rape-fed hogs had not only overtaken the others, but had put on two hundred and seventeen pounds more flesh. In doing this, thanks to the rape pasture, they had used two hundred and eighty pounds less grain.

Relative to the gains made the appended tabulation shows the total gains of both lots, the average gain for each pig, the average daily gain for the first six weeks, and the average daily gain for the last six weeks.

| | Total Gain, Pounds. | Average Gain. | Average Daily Gain for the First Six Weeks. | Average Daily Gain for the Last Six Weeks. |
|---|---|---|---|---|
| Without rape | 1,194 | 70.2 | 0.71 | 1.08 |
| With rape | 1,411 | 83.0 | 0.88 | 1.23 |
| In favor of rape lot | 217 | 12.8 | | |

Each pig in the experiment in the rape lot made 12.8, or nearly thirteen pounds more gain on the average than those without rape, or, on the whole, surpassed them by two hundred and seventeen pounds. That the gains were consistent is evidenced in the two comparisons in the above showing that during first and last six weeks the rape fed pigs were in both cases the better flesh gainers.

In connection with the superior gains made by the rape-fed pigs it is interesting to note that costs of grains were less.

| | Grain per 100 Pounds Gain, Pounds. | Cost of Grain per 100 Pounds Gain |
|---|---|---|
| Without rape | 437 | $ 3.78 |
| With rape | 420 | 3.36 |
| Difference | 17 | $ .42 |

The above indicates that where the pigs without rape required four hundred and thirty-seven pounds of grain to make one hundred pounds of gain, the pigs on the rape pasture took four hundred and twenty pounds, showing that the latter required seventeen pounds less. When reckoned on a cash basis the pigs that were fed on the rape pasture required forty-two cents worth less grain than those without the advantage of the succulence furnished by the growing rape.

This experiment is important in that it shows an advantage of the rape-fed hogs in two ways. In the first place, they made the best gains on all points, and secondly, they made the best gains at a less expenditure of grain and money. We believe, also, that the lessened grain means less labor.

In many cases farmers have become used to keeping pigs in small yards so that they have almost forgotten, apparently, that the hog likes a liberal amount of green feed. Some farmers lay great stress upon the importance of pasture, and we believe that in the long run these men are the ones who have the healthiest swine. Green feed is natural to hogs during a portion of the year. There is nothing that will put them in better order and continue to keep them so, and in the case of the experiment outlined in the above, showing the utility of feeding rape, there is a marked saving in the grain, that is more or less expensive, in getting the hogs ready for market or growing for breeding purposes.

Rape should be sown broadcast or drilled after all danger of frost is passed. It requires very little attention and particularly if sown broadcast. It grows fast, requiring but six or seven weeks after sowing to be ready for pasturing providing the conditions are usually favorable. Few farmers who have sown the plant and given it a fair trial have been displeased with the results.

## FARROWING-HOUSES.

*Courtesy of Kansas State Agricultural College.*

At farrowing time the sow needs to have a warm, comfortable and well-lighted house by herself. This house needs to have a railing on the inside about nine inches from the floor and extending out from the sides about twelve inches, for the protection of the young pigs. This railing is best made of two 2x4's with two inch space between them, and also the wall. It is desirable to have small yards connected with the houses, to give the sows before farrowing, and the sow and pigs after farrowing, moderate exercise. The houses used at the Kansas Experiment Station are 6x8 feet—six feet high in front and four feet in the rear. They are enclosed with drop-siding and covered with grooved roof boards and ogee battens. The floor is made of two inch planks. These houses are placed on runners, and are illustrated in plates 49 and 50. In plate 50 the houses are located in an alfalfa pasture, and are raised sufficiently to allow the hogs to run under them for shade. In this case the houses proper are used for the storage of feed. Being on runners they are easily handled by a team, and can be placed on any part of the farm. When desired they make excellent chicken-houses. In cold weather they can be placed under an open shed or in a protected place and be very warm. The lumber required in the construction of these houses is as follows:

48 ft. 2 inch plank, for floor.
72 ft. grooved roof boards (16 ft. stuff).
140 ft. drop-siding (either 14 ft., or half and half 12 and 16 ft. stuff).
64 ft. ogee battens (16 ft. stuff).
3 pieces 2"x4"x14', for studs and plates.
1 piece 2"x4"x16', for front and back plates.
2 pieces 2"x6"x8', for runners (preferably oak).
3 pieces 2"x4"x10', for guard-rails inside of house.
1 pair strap hinges, for door.
1 pair butts, for window.
1 window, 52x20.
1 door hasp.

The yards are best made in movable sections. The lumber required is: Nine pieces 1"x4"x12'. (See plate 49.)

These houses have proven their merit at the Agricultural College, especially for early spring and late fall pigs. They soon pay for themselves by the increased number of pigs saved through their use.

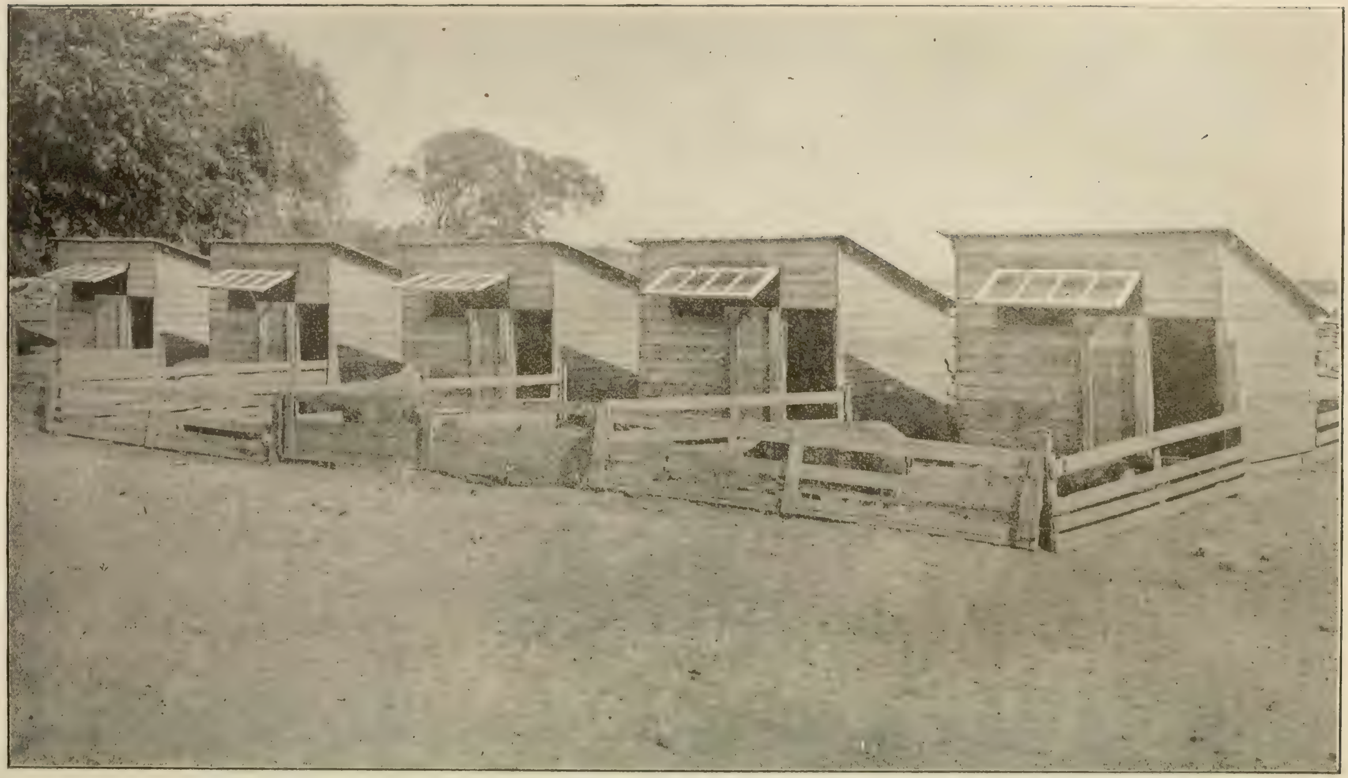


Plate 49. Farrowing-houses and Yards.

Very little difference is noted between skim-milk and buttermilk. The gains of the hogs in the different lots are nearly equal, but the amount of grain consumed per one hundred pounds of gain is considerably less with the hogs on pasture. The gains and grain consumed per one hundred pounds of gain are practically the same for alfalfa and rape pasture. The area required for the hogs on rape was twice that required for those on alfalfa.

### EXPERIENCE WITH RUNT PIGS.

After the shoats suitable for experimenting were placed in the feed-lots in the summer of 1902, there remained behind a few runts that were rather sorry-looking specimens. We made a combination of the best feeds we had and undertook to see what we could do in bringing out these runts. They were placed on rape pasture and given a grain mixture of one-third corn, one-third Kafir-corn and one-third shorts. For every one hundred and fifty pounds of this mixture there was added twenty pounds of dried blood and thirty pounds of soy-beans. This feed, together with good care, produced some excellent results, as shown in Table VII.

TABLE VII—RESULTS ON FEEDING RUNT PIGS.

| Number of Pigs. | Number of Days Fed. | Gain. | | Grain Consumed per 100 Pounds Gain. |
|---|---|---|---|---|
| | | Total. | Daily per Head. | |
| 4 | 278 | 1.052 lbs. | 0.94 lbs | 830 lbs |

In addition to the grain ration, the hogs in the above experiment picked up a little feed by running after steers, of which it was impossible to take any account in the above table. For grain fed the cost was $2.64 per one hundred pounds of gain. The pigs sold for $6.25 per hundred-weight, leaving $3.61 per one hundred pounds of gain to pay for labor and what little pasture and steer droppings were consumed.

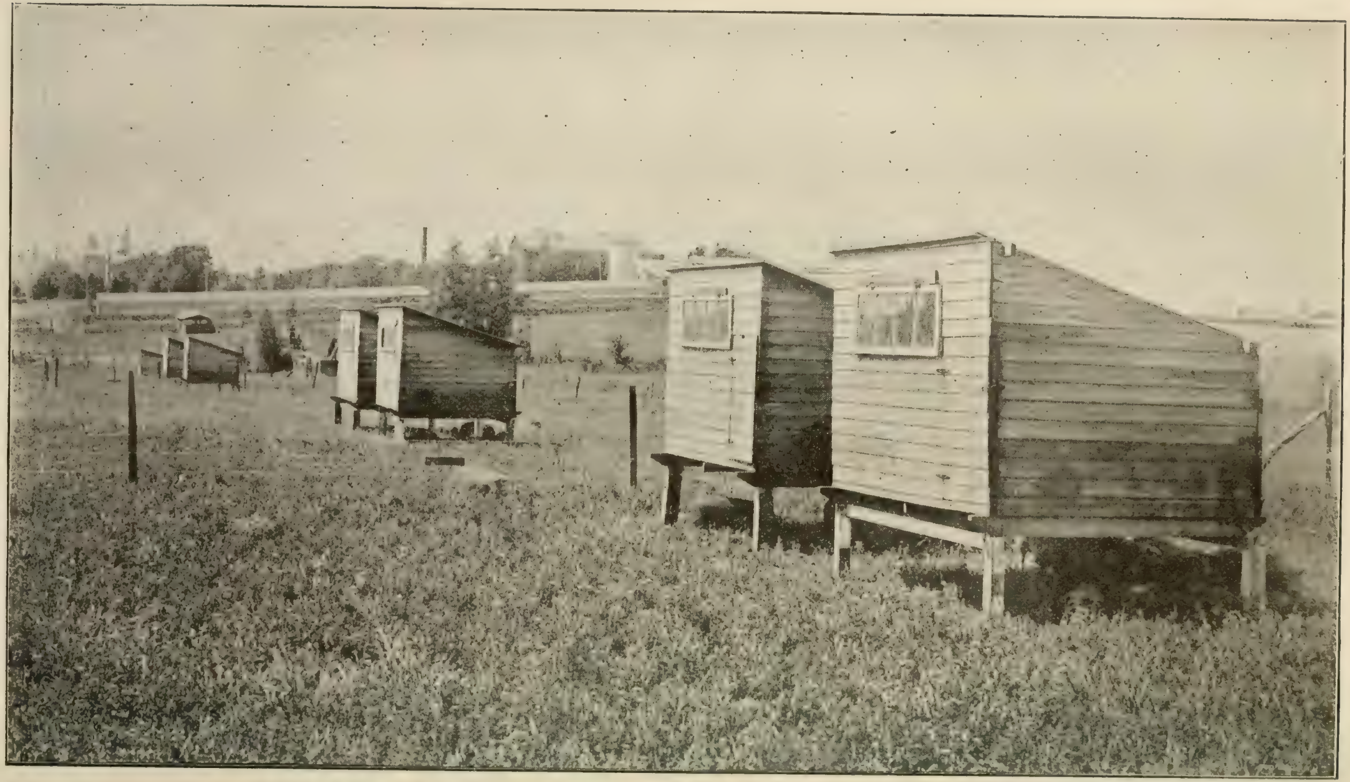


Plate 50. Farrowing houses Used for Shade and Storing Grain in Pasture.

# SHEEP.

## DOES IT PAY TO RAISE AND FEED SHEEP IN IOWA?

*J. S. Smith, Plover, Iowa, Before the Pocahontas County Farmers' Institute.*

This subject should be of interest to every Pocahontas county farmer. But we are afraid that many of the farmers in this county will look upon sheep raising as of little importance to them. No doubt there are those in our midst who have made a failure with both raising and feeding sheep and thus condemn them.

To make sheep feeding and raising a success you must be properly fixed for it. Build a woven wire fence not less than fifty inches high around your farm, then you will not be troubled with worthless dogs, and your sheep will not be bothering your neighbors. Get the water off your land (where you intended to put in five inch tile put in eight or ten inch), then sow all you can to clover and timothy. Don't let the weeds grow up along your fence but sow it to grass.

Get fifty or one hundred ewes that will drop lambs about April first; have plenty of pasture for them and if you can change them every two weeks they will do much better. From fifty good ewes you should raise seventy lambs.

As soon as your grain is cut turn your lambs out into your field. Don't be afraid—they won't hurt your grain shocks or your corn, but those weeds that have been sapping the life out of your farm the past twenty-five years will begin to disappear, and your crops will yield one third more. Give them a chance, they will do the work and won't look at the sun to see if it is seven o'clock in the morning or six o'clock at night. These lambs by the 15th of December should weigh in Chicago, ninety-five to one hundred pounds each.

If you start with fifty ewes you will not have enough to make a car load. Buy enough western lambs to fill out your car and also another car, about September first; turn them into your field; commence feeding them a little oats; in about two weeks add a little corn; at the end of a month, giving them nothing but corn, they will eat but little. Do not think because these lambs are running in your corn field they get all they want, and say if they do not know enough to eat it let them go without. You will have lambs in your flock that can not get the corn off the ear and must go without, when you get these to Chicago you will find about fifteen or twenty culls in your lot that, if you had given them a little shelled corn, would have sold as well as the others.

In purchasing western lambs, if possible, get those that have been grazed on the alkali lands of Wyoming. You may have to pay a little more for them but you will find them the cheapest in the end. They are free from disease and will feed out much better than our native lambs.

Western lambs are contented fellows; they will eat what grass they want and then lie down where they stopped eating, and when their appetite comes again will get up and go to eating again. You may have feed troughs or your cornfield only a few yards away, but they will not go near them. Drive them to your feed and stay with them for half an hour. About eight or nine o'clock in the morning drive them into your cornfield, and do the same thing in the evening. The more you get them to eat the better gain you will have, and will be much cheaper while on grass than when cold weather sets in.

When it gets cold give them what clover hay they want; they will not eat a great deal, as they will pick up roughness in your field, but it is important that they should have some clover every day. In going through your cornfield you will find in the early part of the season considerable corn pulled off on the ground. Do not think this is wasted; the first hard frost that comes they will eat it. Don't be afraid, for they will do you a good job of husking, and won't dun you for four cents per bushel when it is completed. Do not expect to get a gain of twelve to fifteen pounds per month on your lambs. If you get seven or eight pounds gain in a month you are making money and getting a good gain when you have a flock of four hundred to five hundred.

Another important matter in feeding sheep is water. Have plenty of good fresh water as close to their place of feeding as possible. Many people will tell you sheep don't need water. Well, just sit down and watch them when they are eating shelled corn and you will, perhaps, see the same fellow go and drink a dozen times.

If you get good lambs by September 1st and sell them by December 15th they should not consume over one and one half bushels of grain during this time, where they have a free run of your farm, and you should have a gain of close to twenty pounds; that is, a western lamb in fair flesh that will weigh sixty pounds September 1st should weigh about eighty pounds by December 15th.

Go out among your lambs and get acquainted with them so they will crowd around you and look up into your face. If you don't like sheep stop right where you are and turn the sheep business over to the boys and don't go near them.

If you have made a failure of raising and feeding sheep don't condemn them but call the boys and see if they can't make a success of what Dad failed in doing, and pay off that mortgage that has been increasing year by year.

## WHY I KEEP SHEEP.

*E. L. Bitterman, Before the Cerro Gordo County Farmers' Institute.*

I keep sheep for profit, pleasure and convenience. I have found no class of live stock that can take the place of sheep on my farm. They are easily handled, and taking it all the season through will thrive with less care and cost than other stock. With the pig it is corn, corn, with a little grass for change; with the lamb it is grass, grass, with a little corn to finish him. My sheep spend a large part of the grazing season on catch crops as it were, where it would be quite impossible to graze other stock, thus the advantage of the sheep. We turn them on the oat field in the spring until near the time of its shooting, say from the 1st to the 10th of June, to the benefit of both sheep and oats. I have never had oats go down on account of being on rich land where they were fed off properly with sheep. Cattle are too heavy for this purpose and the sheep should be kept off for a while after the rain. From the oat field the sheep are turned into the pasture for a couple of months till after the harvest is gathered, when they are turned on the oat stubble, which has plenty of clover and rape growing in it. They are kept here until the latter part of September, then they are turned into the cornfields where rape was sown at the last cultivation. Here they are kept until snow comes. Thus handled they keep in good health, thrive nicely, and make cheap mutton and wool. One hundred well bred ewes, taken as an average for ten years, are worth $500, and will weigh about fifteen thousand pounds, and if pastured as cattle are, will need about the same amount of pasture as fifteen thousand pounds of cattle. They should and will, with fair care, rear one hundred lambs and produce eight hundred pounds of wool per year. And again taking the average for ten years, will bring about $650 per year. One naturally does best with the kind of stock he likes best. I have had a natural fancy for good sheep since a child, and it grows more or less with age. I would go more miles to see good sheep than to see Dan Patch or the great bull Duke of Oakland. Now, I have no quarrel with the steer, cow or hog. Let the market go up or down, but I never could see why, when sheep are low for a while, many men will close them out, bells and all, but still be true to other stock when like conditions exist.

Sheep and wool growing is a great business, a fascinating business, like all other stock growing and breeding, with its ups and downs, with its pleasures and disappointments, with its profits and loss, and while I have not grown rich raising sheep, the balance is usually on the right side of the ledger, and that I am now a sheep breeder, I'll stick to my last, and no steer feeder or hog feeder, can tempt me to leave it, for he also has his troubles; and taking it all in all, I think good sheep pay as good returns on high-priced land as any other stock one can grow.

In conclusion, will say there are four large C's that must enter into successful sheep growing, namely: Careful selection, Cleanliness, Clover hay and Common sense.

## PROFITS IN SHEEP.

*E. Edmundson, Before the Ida County Farmers' Institute.*

The profit in sheep very largely depends on the amount of care bestowed upon them. Perhaps no better explanation could be given than my own experience with a small flock of Shropshires.

The first year I fed them largely on oats, straw and corn. I found when shearing time came that a good deal of the straw had sifted down into the wool, around the neck and head of the sheep, which took the edge off the shears and also a little of the edges off my shearer's temper.

When the wool was sold it was called chaff, and I got eight and one-half cents per pound. I had expected to have quite a nice lot of ewe lambs in the increase. I had just one.

My next year I left the straw on the barn floor for bedding and got some good racks to hold hay and grain as a grain feed, mostly oats. I bought a recorded ram for that year and improved the flock very nicely, but when I tried to sell the ram at half what he cost me, I was offered a little over a quarter. From this on the sheep have done their full share of profits on the farm.

Last year's clip was an average of nine and one-half pounds per head, selling at twenty cents net, giving a return of $1.90 for each head, including five lambs which cut the average down.

There is an old saying that a sheep never dies in debt to its owner. This is not as near correct as it reads. Sheep sometimes get sick like any other stock, with the difference that a sick sheep hardly ever recovers.

Another fallacy is that sheep will live and grow fat on weeds. Mine never seemed to do quite as well when not fed a little grain. They will eat great quantity of weeds, however, and are a splendid scavenger on our pastures, clearing up a poor pasture and finally making a smooth, clean sod, vastly richer than before the sheep commenced to trim up the weeds and coarse grass.

It is generally calculated that the increase each year to be one and a half, but I have not reached that high, perhaps one and a quarter would be nearer. Many are prevented from handling sheep because they are not fixed for it. It is highly needful that they should be fixed before going into it. A very cheap fence can be made by getting any good wire netting about twenty or twenty-four inches high and two barb wires above. The idea that seven or nine barb wires are just as good is a mistake, as with the barb wire being low enough to catch the wool of an animal as they run along will always lose a large per cent of the wool, and will always make the fleece very rough and untidy looking when on the market.

As a help to our soil in increasing fertility, and as a sort of digesting machine for clearing up unsightly corners of our fences, give me a nice flock of sheep.

Sheep to be profitable must have good care, good sheds in wet weather and very clean places to eat off of, as they always want to be invited to eat at the first table. I keep a self-feeding salt box in their shed where they can always find salt.

My small amount of experience has only been as a breeder. The good profits and quick returns of buying sheep to put in the feed lot is a branch I have not entered, but believe that many of the Ida county farmers will find this very profitable.

The profits will become larger in raising and breeding sheep when more of our farmers handle them, as the losses in buying blooded rams for use, with no market for them amongst the neighbors is quite large.

Again, as we are at this time in our county, there is very little sale for thoroughbred ram lambs, and these to be thrown on the market as butcher stuff, at a small per cent of their actual value. There is, however, one way of reducing this loss, and that is by killing the surplus for our own table. A lamb, if fed right, is as nice eating as a turkey and perhaps much easier digested.

## SHEEP ON THE FARM.

*Chicago Drovers' Journal.*

There are not many farms either too large or too small for sheep. Sheep on the farm pay. We believe that this simple proposition has been proven on every farm where they have been given at least moderate care. Writers at various times have lauded the possibilities of the flock. Odd as it may seem, the subject has not been exhausted. So productive of profit to the purse and fertility to the soil is the sheep that a great deal may be said and still remain within the limits of reason. While the flock may be made to prosper under many unfavorable circumstances, still they need some attention. Even the shiftless farmer can make something out of sheep, but still there are limits that even the sheep can not grow profitably. However, a man may succeed with sheep, we believe, who is so shiftless that he might entirely fail with horses, cattle or hogs.

One of the first essential is good stock. We do not necessarily mean pure-bred stock, but well bred individuals. To illustrate how simple this may be one need only look about himself in almost every community and find one or more flocks that have been gradually bred into first class grade stock by the introduction of pure-bred or high-grade rams of some first-class mutton breed, and by following a course of breeding for a series of years with vigorous, serviceable rams from the same breed. To show what may be done with a flock in comparison with other stock, we will quote from a letter from a correspondent who is evidently a strong admirer of the flock as compared with other live stock:

"It requires about the same amount of feed to produce a pound of flesh on a steer as on a sheep. The investigators show that to be true as a rule. But sheep will thrive on weeds and grass that cattle will not touch, and when the fact is remembered that sheep produce a clip of wool every year in addition to mutton the balance is in favor of sheep.

"It is often said that it does not pay to raise sheep on high-priced land. If that is true, then it does not pay to raise cattle or hogs on the same land. It costs no more, pound for pound, for one than the other.

"Fat lambs always find ready sale at good price , and choice lambs are generally scarce at high prices. If lambs are kept till they grow a fleece the price of the wool is generally the profit of the sheep over the fat cow or fat steer. Of course sheep will not fatten on weeds or brush or thrive in cold, wet lots upon neglect. But they will show up in the sales' pens favorably with steers or cows if they are given the same feed and the same care, or even less.

"Sheep can be fattened in less time than cattle. It is generally found that the steer is not finished in one hundred days, but must be topped off with about two weeks' extra feeding. The sheep can be ready and prime for the market in one hundred days.

"Sheep return more fertility to the soil than any other animal. The cattle men on the big western farms are just beginning to find that out, and many of them, particularly in Texas, have sold their cattle and gone into the sheep business. These same men were shooting up the sheepmen on the ranges only a few years ago at that.

"Sheep are the friends of the small farmer who has none too much money and can not afford to go into cattle. Our people are learning to like mutton because our farmers are learning how to grow and fatten it, and the demand will increase rapidly. There is no doubt that sheep can be raised with profit on any farm where cattle and hogs can be made to pay."

We do not believe that any regularly conducted live stock farm is too rich for a flock of sheep. It is certainly true that the land with much poor soil can not afford to get along without the flock. On the land whose owner is addicted to the grain-growing habit, caring very little for live stock and their uses, the flock might be profitably maintained where other stock might be out of the question. Their advantage lies principally in the fact that they are easily confined and fed to advantage upon the vegetation that would otherwise go to waste. In the case of the noxious weeds the proportion that were destroyed would depend largely upon the number of sheep and the scarcity of better feeding.

## SHEEP ON FARMS.

*Chicago Drovers' Journal.*

It happens that while the sheep is the most profitable animal a farmer can keep, it may be kept more economically than any other kind of live stock. It may really be subsisted on what would otherwise go to waste. American farmers have not yet learned this fact. But the farmers of Great Britain, including Ireland, have learned and realized it, and have made it such an important part of their farm management that up to within only a few years past the number of sheep kept by them on a territory smaller than our largest lake—in which the whole of it, in fact, might be placed, with ample free sailing room around it—exceeded that we had in all our states and territories; and even now we have only about double the number. And while this is so, at the same time we have to rake over the whole earth to gather in sufficient wool to supply our own factories. In fact, we are only just now beginning to value the sheep at its true worth as a money maker for the farmer, and to accept it at its real value as one of our most agreeable meat foods. But we are gradually improving, although the total number of sheep sold in Chicago in a week averages less than three head per year for each one of the city's population; leaving out the whole region, in every direction, which is tributary in this respect to this market, and there can be no doubt that very soon the production of twice as many sheep as are reared at present will be disposed of, with the wool produced included, without overreaching the demand.

Virgil said the sheep turned the land it trod upon to gold, and this may be said now with perfect truth, for no other kind of live stock is so profitable to keep, in three different ways, too. It pays a handsome profit—50 per cent—on its feeding in its own finished condition for market; it makes its own value in its lamb, and returns 50 per cent profit on its keeping in its fleece, for a well-managed flock of good ewes will double itself, and more, every year by its lambs; and lambs come now to market within a year, and bring a better price than full grown sheep do, for the weight of them. But if there was no actual money profit to be made from a flock of sheep there would be an actual gain in the improvement of the land sufficient to make the keeping them desirable. For instance, let me mention a matter of my own experience. I have always kept sheep. I was the owner of a little flock when I was a mere child, and when a man, and up to the present have always had them. Some years ago I had a field lying fallow or used as a pasture, until it was almost wholly covered with a dense growth of blackberries, and the cattle were thus crowded out. I turned in over a hundred sheep early in the summer, when the bushes were in full leaf and blossom. The sheep fed on them with avidity, and before the fall not a green leaf was to be seen, and the stems and branches were half eaten. Everything in the field, except the grass, was killed outright. The field was plowed and put in corn the next year, and made a heavy crop. It brought two crops of corn and a crop of wheat, when it was seeded with timothy and mammoth clover and brought a big crop, so that as the team went along the head of the driver only could be seen above the level of the grass. The grass was mowed for three years successively, and has been in pasture under sheep some years, keeping in fine condition an average of ten sheep, lambs in addition, to the acre. It is now occupied by a tenant, who has been able to pay $10 an acre annual rent for it, and make a good profit in addition.

But this is only one instance of many which could be given of the profit of keeping sheep as an accessory to ordinary farming and from this source alone.

View in the Horticultural Department, Iowa State Fair, 1904.

# POULTRY.

## POULTRY RAISING ON THE FARM.

*Farmers' Bulletin, No. 111, U. S. Department of Agriculture.*

### INTRODUCTORY.

The barnyard fowls are regarded by most farmers as a very insignificant part of their live stock; and yet, although so often neglected and forced to shift for themselves, the poultry and egg crop constitutes in the aggregate one of the most important and valuable products of American agriculture. The conditions in this country are such that the poultry industry is capable of indefinite expansion, and therefore able to meet any demands that may be made upon it either by home or foreign markets.

*Importance of high-grade product.*—In order to secure a larger consumption of poultry products per capita in the United States, it is of prime importance that there should always be an abundant supply of strictly fresh eggs and of the best grades of table poultry. This condition is also a necessary factor in the development of the export trade. When the markets are filled with eggs which have lost their quality and flavor by long keeping, and many of which have acquired an offensive taste; when the broilers and roasters offered to the consumer are thin, tasteless, tough and altogether unfit for the table—it is not surprising that they are passed by, and beef, mutton, or pork taken in their stead. So, also, when the exporter is buying for consignment to foreign markets he must be able to find at all times a good article of eggs or poultry in sufficient quantity or he can not continue his trade.

*Possibility of increased consumption.*—An increased supply of poultry products of the highest class would unquestionable lead to an increased consumption. There is no more staple and popular article of food, and consequently we may confidently expect and demand to develop in proportion to the increase of our population and to the care and intelligence with which the markets are supplied.

*Increase of product.*—There is no stock on the farm that yields a better relative return to the food consumed than do the hens, and consequently it is worth while to consider in what manner their product may be increased without disproportionately increasing expenses. The fowls must have comfortable and healthy quarters, they must have proper food and nesting facilities, but it is not at all necessary that there should be extravagant expenditures in supplying these.

### THE KIND OF FOWLS TO KEEP.

The kind of chickens to keep upon a farm depends upon almost as much upon the kind of a man who manages them as upon any other condition. There are no birds which stand neglect better than the common, mongrel barnyard fowls, for these have lived and developed under unfavorable conditions and are accustomed to shift for themselves. They are generally hardy, vigorous, and yield a fair return in eggs or as table poultry; they respond fairly well to generous treatment, and, if selected with some care, are by no means to be despised, even when their product is compared with that of the standard breeds.

### IMPROVEMENT OF BREEDS.

The improvement of the common poultry should begin in most cases by breeding from birds selected for their shape, size, and productiveness, and by bettering the conditions of life under which they are kept. If the owner is willing to go a little further and to bestow somewhat more attention upon his birds, he may cross them with males of a standard breed, or replace them entirely by purebred males and females.

### CARE OF FOWLS.

The standard breeds have been brought to a higher plane of development by extra care and more skillful management, and if they are to maintain this improvement they must be continued under the conditions which brought it about. They suffer more from neglect and unhealthful surroundings than do the common fowls, because less accustomed to these conditions. The standard breeds, for these reasons, may not always give satisfaction, if their characteristics and requirements are not understood. If, however, the highest returns are expected which care and skillful management can obtain, then a breed of fowls should be adopted which has been bred for generations with this object in view.

### POPULAR VARIETIES.

The most popular fowls in the United States are the American breeds known as the Plymouth Rocks and Wyandottes. They are of medium size, good as broilers, good as roasters, good egg producers; the hens are good sitters and good mothers, and for these reasons they are known as general-purpose fowls. In the Barred, Buff, and White Plymouth Rocks, and the White, Buff, Silver, Golden, Black, and Partridge Wyandottes, there is a sufficient range of color to meet almost any taste.

### EGG PRODUCTION.

For farmers who desire fowls more particularly for egg production, the Mediterranean breeds, particularly the Leghorns, Minorcas, and Spanish, are to be recommended. The birds of these breeds are smaller, more active, and greater foragers than the Rocks or Wyandottes, and as layers they are unsurpassed. Should it be desirable, on the other hand, to raise heavier birds than the Plymouth Rocks, we should naturally turn to the Asiatic breeds, which include the Brahmas, Cochins, and Langshans.

### WEIGHTS.

The standard weights of these different classes are as follows:

| Breeds. | Cocks. | Hens. |
|---|---|---|
| | *Pounds.* | *Pounds.* |
| Plymouth Rocks | 9½ | 7½ |
| Wyandottes | 8½ | 6½ |
| Light Brahmas | 12 | 9½ |
| Dark Brahmas | 11 | 8½ |
| Cochins | 10½ to 11 | 8½ |
| Langshans | 10 | 7 |
| Minorcas | 8 | 6½ |
| Spanish | 8 | 6½ |

The Leghorns are smaller than the Minorcas and Spanish and have not been given standard weights.

The Rhode Island Red is a promising general-purpose breed, resembling in size and form the Plymouth Rock. It has been developed by crossing and selection, but has not yet been admitted as a standard breed.

### SELECTION OF STOCK FOR BREEDING.

Having in mind the size and peculiarities of the varieties of fowls to which reference has been made, it would appear to be a not difficult matter to select one which would satisfy the requirements of any farm. In purchasing breeding stock it is important to purchase from reliable breeders only, and to ascertain that the stock is in healthy condition and that it has been bred for early maturity, size, shape, and egg-producing qualities rather than for perfection of feathering. For the show room the feathering can not be neglected, as the judges often place it ahead of all other features of the bird's make-up; but for the farm the color and marking of feathers must be held subordinate to the utilitarian qualities. The feathers should not, however, be entirely neglected, as their perfection is an indication of the purity of blood and carefulness of breeding.

### POULTRY HOUSES.

It is very desirable that poultry should be provided with a house somewhat separated from the other farm buildings, but near enough to the barnyard so that they can spend a part of their time in scratching for and gathering up the many seeds and grains which otherwise would not be utilized. On farms where no poultry houses is provided the hens are compelled to seek roosting places wherever they can find them—sometimes in fruit trees, sometimes on feed racks, sometimes on the farm machinery, or even the wagons and carriages. The result is not only untidiness, but fruit, feed, implements and wagons are soiled and injured by the droppings, and sometimes vermin swarm in the roosting places to such a degree that the hens are voted a nuisance rather than a desirable part of the farm stock. If these vermin-infested places are near the horse stable, the mites may attack the horses, causing itching and a mangry condition of the skin, the origin of which is not always suspected.

## PREFERABLE CONDITIONS.

Poultry houses need not be elaborate in their fittings or expensive in construction. There are certain conditions, however, which should be insisted upon in all cases. In the first place, the house should be located upon soil which is well drained and dry. A gravelly knoll is best, but, failing this, the site should be raised by the use of the plow and scraper until there is a gentle slope in all directions sufficient to prevent any standing water even at the wettest times. A few inches of sand or gravel on the surface will be very useful in preventing the formation of mud. If the house is sheltered from the north and northwest winds by a group of evergreens, this will be a decided advantage in the colder parts of the country.

## UNUSED BUILDINGS.

Sometimes there is already a small building on the farm which has been used for implements or animals, and which is no longer required for these purposes. Such a building may be easily fitted for poultry by cutting a small door in one side and placing roosts and nests in the interior.

## INEXPENSIVE STRUCTURES.

In case there is no building suitable for remodeling into a poultry house, an inexpensive lean-to may be built, or a new building constructed. A house for this purpose should be planned with a view to simplicity, economy, and convenience, while supplying the conditions proper for successful poultry keeping.

## FITTINGS.

*Roosts.*—The important points are a nearly flat or slightly rounded surface on the upper side and as few cracks and crevices as possible in which vermin may hide. The roosts may be made of two by three inch scantling and should be so put in that they can easily be removed at any time for cleaning and disinfection. A platform is often placed under the roosts to catch the droppings and the nests are placed under this platform.

*Nests.*—The simplest form of nest is a box placed upon the floor of the poultry house. With heavy fowls, which are apt to break their eggs in fighting away other hens that try to enter their nests when they are laying and thus acquire the habit of egg-eating, a more concealed or dark nest may be necessary.

*Floor.*—One of the most troublesome parts of a poultry house to make satisfactory is the floor. Many use earth floors, but these are often damp, especially in cool weather, and they induce rheumatism, colds, roup, digestive disorders, and various other diseases. Some have put in cement floors, but have found these cold and also more or less damp. Probably a good cement floor, laid on broken stone and covered with a few inches of earth, would be satisfactory, if not too expensive. A board floor, six or eight inches above the earth, with good ventilation under it, is dry but too cold, except in the South. A double flooring, laid tightly with building paper between, or a good single flooring covered with a few inches of dry earth, is probably the best. In all cases of board floors there should be sufficient space beneath for ventilation and to guard against the lodgment of rats.

### SPACE TO BE ALLOWED.

The amount of space to be allowed for each bird depends upon the size of the birds, whether a shed is attached to the house or whether the fowls have a free run of the open fields. For birds in confinement there should be from six to fifteen square feet for each adult bird in case there is no shed attached to the house; and with a shed this space may be reduced about one-half. The yards should be large enough to allow exercise in the open air, and to furnish more grass than the birds will eat. This will vary from sixty to one hundred and fifty square feet per adult bird. The open shed facing the south, where the birds can be induced to hunt for their food and take exercise in all seasons of the year, and where they can enjoy the pleasure of scratching and dusting themselves in the sunshine, even during the winter months, is of great assistance in maintaining the health and productiveness of the flock. The roosting space allowed should be six to eight inches for the smaller breeds, eight to ten inches for the medium breeds and ten to twelve inches for the larger breeds.

### VENTILATION.

Poultry houses should be well ventilated, but so arranged that drafts of air will not strike the birds. Windows and doors should be provided in such locations that the sun may shine into the building a considerable part of the day. Sunshine is required both to keep the house dry and to destroy various forms of infection.

### POULTRY COOPS.

A liberal supply of coops should be provided for the confinement of hens with broods of small chicks, and for those hens which insist upon sitting at inconvenient times. A few days in solitary retirement will usually break up the desire to sit, and the hen will soon after resume laying.

The common A-shaped coop is one of the most easily constructed and convenient forms in use. The one disadvantage connected with it is the difficulty of removing the feeding and drinking vessels for cleaning or of catching a bird in it without danger of some of the birds escaping. To obviate this, one of the slats may be made to slide. The opening made by sliding this slat is sufficient to admit the hand and arm so that any part of the coop may be reached without leaving an avenue of escape unguarded. For early hatched chicks, which come out when the atmospheric temperature is so low as to be injurious to them, a combination of coop and glass-covered run has been found very useful.

### RANGING OF FOWLS.

Poultry may be raised with the greatest economy on the large farms of the country, where there is unlimited range, and exhaustless supply of insects and worms, and an abundance of seeds and grains going to waste which poultry alone can utilize. Under such circumstances fowls take care of themselves so well and are so energetic in seeking their food that they are either forgotten and allowed to shift for themselves when they really need attention and assistance, or they are regarded as a nuisance because they sometimes do a little damage. When fenced away from the gardens and flower beds, fowls do little damage and cause scarcely any annoyance on a farm. On the other hand, they do an immense amount of good in the protection of crops by the destruction of injurious insects, larvæ, and worms.

### COLONIES.

Sometimes it is advisable to divide the farm flock into colonies and place these at different points upon the farm in order to secure additional range, to remove the birds temporarily to a distance from certain crops, or for other purposes. In this case cheap, light, and easily handled colony houses may be constructed and placed where the fowls are desired to range. After being confined in these houses a few nights the birds will adopt them as their habitations and return to them.

### POULTRY IN COMBINATION WITH SPECIALTIES IN FARMING.

There are certain special lines of agricultural operations with which poultry raising may be advantageously connected. In dairying there is usually a large quantity of skim milk or buttermilk which may be utilized to furnish a considerable part of the poultry ration. There is also much food to be gathered by the fowls about the stables, manure piles, and pastures which would otherwise go to waste.

### ADVANTAGES ON FRUIT FARMS.

Upon the fruit farm fowls are also of advantage. They keep down the insect pests, and they may have a free range the greater part of the season without the possibility of doing any damage. Plum growers have found poultry especially helpful in keeping down the curculio, and even apples have been considerably benefited. If small fruits are injured, they may, of course, be protected by confining the fowls for the limited season when the fruit is ripening. The waste fruits, either in winter or summer, are a welcome and valuable addition to the poultry ration.

### POULTRY AND MARKET GARDEN.

The market garden also furnishes a large amount of waste products which may be utilized for poultry feed. There is the waste lettuce, the small heads of cabbage, the unsold beets, carrots and potatoes, the pea, and corn which can not be marketed for any reason, the waste of the small fruits, etc. If properly cared for, the hens will bring a steady and reliable income durthe winter months. Dried clover and other green feed, roots, and tubers should be saved for them during the summer. These should be steamed and fed with the mash, or cabbages and beets may be fed raw. A catch crop of buckwheat or oats and peas will furnish much food at little expense. Bran, meat, meal, wheat screenings, and oats purchased for poultry will bring returns in eggs and will also add materially to the fertilizer supply.

### OPPORTUNITIES AFFORDED BY THE DAIRY.

Dairymen who have town or city milk routes, and market gardeners who retail their produce, have exceptional opportunities for marketing fresh eggs and poultry at the highest prices. They become well acquainted with many of their customers by their daily visits, and they are looked upon as a direct channel of communication between the country and the city. They should by all means make the most of this advantage, for any class of agricultural producers who can reach the consumer without the intervention of the middleman is indeed fortunate.

## CAN POULTRY RAISING BE MADE PROFITABLE?

*Mrs. Asa Ames, Before the Tama County Farmers' Institute.*

To the question embodied in the subject of this paper the answer is easily and emphatically "yes." The proof may be found in the fact that not a farm in our broad country but is interested more or less in the poultry business. Even in all of our small cities and towns a large per cent of the families are keeping a few chickens, regardless of their neighbors' gardens and the quarrels engendered thereby. Such a condition would not exist universally at a loss. So we are compelled to answer our subject in the affirmative. If the little flock only furnishes eggs and meat for the owner's table, it pays.

In these days of energy and progress it is not unusual to hear of one who has been singularly successful in some especial branch, but unless it comes under our direct observation, it does not touch us in the right spot, and we are prone to forget the matter and pass it by without a second thought.

It was to call attention to the salient features of the case and remind us again of the vast importance or value of these products that this subject was placed upon the programme. Your committee could not have hoped it was possible to say anything both new and true about poultry raising.

In a very small way and for a very limited time I have been fairly successful with my poultry. Not as a fancier, or on an extended scale, but as a farmer with a little flock of about one hundred hens, and caring for them as a side issue, without other help than an occasional cleaning of the houses. This I secured usually after many hints, much begging, ending by making others so uncomfortable and myself so disagreeable that from sheer desperation the work was done. I do not attribute any success I have had to my own ability, but to what I have learned from the reading of farm papers.

Nor am I able to talk of the raising of pure bred poultry, where the fancy points must be considered and the standard for beauty as well as utility be the object in view. I have tried a few breeds for pleasure, but have not carried the business out for profit. That is, however, the ideal way to raise poultry, where the family is small and only quality needs to be considered. The expenditure need not be large for a small beginning. The work attending is less, the profit much greater than in the work for market purposes only.

We read that recently G. H. Northup received $1,000 for his Black Minorca cock, "Victor," that U. R. Fishel, of Indiana, sold five of his White Plymouth Rocks for $900. The first prize Buff Plymouth Rock cockerel at the Boston show sold for $300, while William Ellery Bright the breeder and owner of the first prize Barred Plymouth Rock at the Madison Square Garden show, New York, refused an offer of $300 for him. These figures show the important place that poultry raising is taking in this country. It is interesting men of brains and talents and is fast coming to the front as another branch of animal industry.

To drop the large figures and come down to those more conceivable, if not more believable, I have been in correspondence for some time with Mrs. Marshall, the Buff Orpington specialist of Missouri, and she is able to tell tales of so fascinating a character as would stir the mind of the most sluggish. Her cocks sell from $10 to $25, and pullets for corresponding prices. She could not supply the demand for them. This is the artistic and profitable way to make poultry pay. By careful breeding and judiciously culling, it would take but a few years to establish a breed and a reputation which would prove at once a pleasure and valuable.

No artist, florist or sculptor could find a better field for his talents or his taste than in the constant, careful training and trimming which produces the perfect form and solid color, with all other points and characteristics, which taken together make up the fowl that scores ninety-six and one-half points. This is ideal, but not visionary. It has been done. What man has done, woman is bound to try to outdo, and in this her eminently proper sphere, she has every chance to succeed.

But I wish to take up the conditions of poultry raising as I have learned them from observation, study, a little experience and a great many mistakes. The two sources of profit are from the eggs and the marketed poultry. Of these we are probably all agreed that the eggs pay the best for labor, time and feed expended. Given then a breed of hens that will lay all winter, do not sit in the summer, are hardy, early to mature, an excellent table fowl that the surplus cockerels may be utilized, not unusually subject to disease, and you have your fortune made.

Of the laying breeds the Leghorns have a fine reputation, but their combs being prominent, easily freeze, and the ordinary chicken house does not enable them to be very good winter layers. The Houdans I found a fine winter layer, a non-sitter, but of rather slow growth and so hardly fit for the table early in the season. The topknot seemed a safe retreat for vermin and rendered the small chicks easily overtaken by hawks. It is not a very pretty creature in wet weather. That good old stand-by, the Plymouth Rock, supplies many of these deficiencies. It is hardy, matures early, good to eat as to color and flesh, an excellent winter layer. My little flock of 100 hens laid forty eggs a day all last January and February, fulfilling all required conditions, and satisfying me for the season as being of royal blood, and good enough for anybody. But there is the adverse side to even these.

As early as April, indeed many in March, began to take frequent rests. True, they were easily broken of this notion. But also after laying five or six eggs more, they would settle down to the evident conviction that that feature of their work was accomplished. From that time on there was a perpetual conflict in our opinions as to quality and kind of work needed. Indeed as I kept but few old hens over, I never wholly converted them to my ideas, but they went to market still ''set'' in their own way.

Since or until then we can develop the perfect fowl, we must adapt ourselves to the means at hand. We must keep the best laying breed that we know and rear just enough of these chicks to supply our houses from year to year. For the table and the market depend upon your neighbors who do not raise such fowls for the eggs for hatching. If your neighbors are as enterprising and obliging as mine, this proves no difficulty. Many around here keep a choice strain of pure bred Plymouth Rock, and they as willingly sell the eggs to the individual as to the store. If he in turn acts in good faith and does not infringe upon their special rights when it comes to marketing. The combination gives to us a more nearly all around purpose hen.

You have noticed that I have given no place to the broody hen. I do not. There are always enough who ''by hook or by crook'' have escaped the kettle or the dealer to fill in the niches where such material comes handy. But pin your faith to a good incubator. If you trust explicitly to the machine to do all the work itself, you will always be of the opinion that incubators are humbugs. It means work and attention every time, but it is work that pays if well bestowed. While one incubator is great, two are greater. Set them up as early as it is possible to care for the hatch, push the growth of the chicks rapidly, and market them as soon as they will weigh three pounds or over. In this climate, under ordinary conditions, they will nearly all be sold by September at from thirteen cents to a higher price per pound. I do not tell of fancy prices, but the actual one that prevails in this vicinity. Should you live near a city the figures for fryers run into the fabulous.

By the starting and marketing of poultry early, the advantages of short and less feed, less time and consequently less work, and better prices are secured, while the ravages of lice, hawks, minx, etc., which becomes so annoying later in the season, are largely avoided.

Were not this paper too long already I would like to speak of the cold storage of eggs. I believe this to be a branch of the profit easy, feasible and practical to every farmer or it might be to a small community in common.

I have said nothing of the warmth, ventilation or cleanliness. Nor have I used that other expression, second in popularity only to the term ''strenuous life.'' I refer to the ''balanced ration.'' All of these items tend to make up that success which is called profit.

I wish simply to emphasize the plan. First, as large a number as convenient to keep of the best laying strain for egg production. Eggs for hatching from some good table breed, those most common in the locality preferable because cheaper and easier to secure. Early hatching, early selling and that eternal vigilance all along the line which terminates in success.

## THE ''BEST'' BREED.

*Abe Stephens, Troy, Missouri, in Poultry Culture.*

There is always more or less discussion going on through the columns of the poultry press as to which is the ''best'' breed. This is a question that puzzles the beginner probably more than anything else, at least it is one of the first he has to contend with. There is no doubt that there is a "best" breed. It does not necessarily follow that it is the same breed for every person, but for everyone who raises fowls there is one breed that is better than the others. Further than that, I believe that on the judicious selection of the right breed depends, in a large measure, the beginner's success or failure in the poultry field.

There are many things to be taken into consideration when it comes to choosing the best breed. If you intend keeping poultry on a city lot or have only a limited space upon which to keep them probably some of the Asiatics would best answer the purpose; if you have plenty of room or keep them for egg production alone then the Mediterraneans would suit you, or if you want a fowl that will do well on medium range and answer the purpose of both of the foregoing classes; one that is a good table bird as well as an ''egg machine,'' you will find what you want in the American class.

For me the '' best '' breed is the White Wyandotte and that I am not alone in my estimate is evidenced by the advertising columns of the poultry journals and the entry list at the various poultry shows, where you will find more advertisements of White Wyandottes, and more entries in the shows than any other breed. I like them because they bear confinement well; are hardy, thrifty birds from the time they are hatched until they reach maturity, do well on free range or in confinement alike; are excellent layers, and on account of their plump conformation and preponderance of breast meat are the best table fowl. Their good points are so many that I could easily exhaust my space and the editor's patience describing them. That they are one of the best breeds is proven more conclusively, I think, by the fact that in a comparatively short space of time they have forged to the foremost rank of Poultrydom on their merits alone. As layers they are not beaten even by the Leghorns, whose claim to superiority rests solely on their ability to produce eggs. For a table fowl, while they do not have the large carcass of Asiatics, their meat is finer fibred and better flavored. They reach maturity sooner and can be forced to broiler size quicker than even the Rocks or other American breeds, and the absence of colored pin feathers give the Whites the advantage over other varieties of Wyandottes. To my mind, aside from their commercial value as table fowls and egg producers, there is no fowl that excels the White Wyandotte from a fancier's standpoint. While they are a solid color variety, do not get the idea that they can be bred to standard requirements with little or no trouble. To get and maintain the chalk-white plumage, true Wyandotte shape, bay eyes, yellow legs and skin, etc., requires no little skill and taxes the breeder's ingenuity as much as does the breeding of the parti-colored varieties.

In mating my pens I choose a strong, well developed and vigorous male with a short, broad back, full breast and as near the ideal Wyandotte shape as possible, bay eyes and white plumage. Whatever defects the male may have I try to overcome in the progeny by mating him with females especially strong in his defective sections. The comb is an important section and we want the best one it is possible for us to get. I prefer to mate birds with good shaped combs a little larger than medium in size. I know that several successful breeders advise against this practice, but my observation has taught me that females with combs a trifle larger than medium, as a rule, lay more eggs than their sisters with the smaller combs, and besides if you breed from the small combed specimens you are likely to get a large per cent of single combed disqualified birds.

In conclusion, I would say to the beginner that there is merit in every breed in the standard, and each breed has its enthusiastic supporters as well as its calumniators and detractors. There are " boosters" and " knockers" in Poultrydom as well as in other avocations. Select your breed carefully, get the best stock you can afford, learn everything you can about them, mate your pens to the best of your ability, treat your customers fairly, and success will wait upon your efforts. Do not be led off by the extravagant claims of the optimistic " boosters" nor discouraged by the calamity howling of the pessimistic " knocker."

## LITTLE THINGS THAT COUNT WITH POULTRY.

*Wallaces' Farmer.*

Raising chickens has been looked upon as too trivial for a man's work. Few farmers devote any time to it. The chickens are left to the good wife when she can look after them, and to their own resources when she can't. The fact that fowls have paid at all under such conditions as surround some flocks goes to show that with proper conditions they can be made one of the most profitable resources of the farm. It is the little things that count for success or failure.

The poultryman must have the roof mended before the rains come, he must treat the hens and chicks for lice before they begin to droop, he must kerosene the roosts before the hens are driven to the floor by mites, he must provide shelter for chicks on range where they can run in from the sudden shower, he must either have shrubs and bushes for shade or he must grow sunflowers and rape. He must not omit a meal of the baby chicks and then give a meal to gorge them; he must not give very cold water to baby chicks, neither must he give the flocks access to the water from the ice cream freezer. If he feeds at 7 o'clock in the morning on week days he should either feed at 7 o'clock Sabbath mornings or scatter grain on the floor Saturday night. Fowls are creatures of habit; regular feeding is one of the essentials.

The successful poultryman cleans house early in the spring, he does not allow empty cans to accumulate to gather rain water, and (if the cans have held paint or white lead) poison the chicks. He takes care that there is no unslaked lumps of lime about the henhouse; in fact, he keeps his eyes open for the comfort of the hens. His houses may be straw shacks, but they are comfortable and dry; his hens lay, and his chickens thrive, not from luck but from common sense and watchfulness. Care and cleanliness are the factors that make for success in the poultry world.

## MODERN CONVENIENCES IN THE HENHOUSE.

*Wallaces' Farmer.*

Feed boxes are best hung to the ceiling or placed on a shelf to avoid soiling by the fowls. A trough covered with a frame work of lath placed on a shelf will avoid the waste of food which goes on when a hen can enter the trough and scratch out most of the contents in an effort to get the choicest scrap.

A low shelf with a row of spike nails on which to stick mangels, onions, or other vegetables, is the best way to feed roots in all but freezing weather.

Galvanized iron water vessels are the best; they should be placed on a shelf between the partitions in a double house. One large sized vessel will furnish water for two pens when so placed.

Every poultry house should have a covered box for droppings. Poultry manure is one of our most valuable and neglected fertilizers. It is specially good for strawberry beds.

On a shelf out of reach of the fowls keep a box of lice powder, a bottle with spraying solution, box of vaseline or carbolized lard, and a ball of string. The bottle should be fitted with a notched cork, to allow the fluid to escape. A few whirls of the bottle over roosts and about walls and floor will keep the house smelling sweet, and destroy germs. Crude carbolic acid is one of the best germ destroyers. It should be used with a spray, and one ounce added to each gallon of whitewash.

## POULTRY RAISING.

*Mrs. B. F. Wilcoxen, Okaboji, Iowa, Before the Dickinson County Institute.*

I am placed in a complicated position, being asked to talk on poultry on the farm, little chicks, the use of the incubator and care of brooder chicks. Therefore, I can not do myself or the subject justice in a few minutes. I'll not go into details, but hope you will get my idea.

Three years ago I knew nothing whatever about poultry, but had the fever badly, and expect it will have to subside in the show room. The height of my ambition was to have a lot of hens, sell the eggs, and make money. We moved from town on to the farm December 2d. There was not a henhouse on the place. In January we built a henhouse, not a very warm one for this cold climate; bought one hundred Bared Rock hens and placed them in the henhouse. I next racked my brains as to what to feed. I had read that red pepper would make them lay, and to put carbolic acid in their drinking water. I first made an enormous mash of bran and red pepper. When I put the pepper in I thought if a little was good, more was better. I used the same rule with the carbolic acid as I did with the red pepper. That afternoon a number of the hens were laying on the floor in the henhouse in the greatest agony. My husband said: "I wonder what ails those hens. You must have fed them too much." I replied, "I do not think so," but all I could think of was red pepper and carbolic acid. That night several of them laid. Those kind lay more and eat less. Nevertheless, I consoled myself with the fact that that was just an old habit that hens have; they preferred death to the treatment they sometimes receive.

We did not get any eggs all winter. The following summer I succeeded in raising eight hundred chicks. The next winter I got lots of eggs, and began to learn how to handle a flock of chickens. The following summer I raised and sold two thousand chickens. This season I expect to raise between three thousand and four thousand, also some fancy birds, having just paid $25 per hundred for barred Rock eggs and Silver Laced Wyandottes at the rate of $5.00 per setting. It is the start that costs. Nevertheless it will pay in the end and pay well.

### CHARACTERISTICS OF THE POULTRYMAN.

The poultry business is not one that has its pathway strewn with roses. Many obstacles arise from time to time that almost cause one to seek other vocations in life. There is just as much hard work in it, both mentally and physically, as there is in any mercantile business. Mentally in trying to solve the problem why every egg did not hatch, why some chicks die in the shell, and how and what to feed to obtain the best results. And physically in keeping the poultry houses clean, feeding and watering the stock.

No season is without its cares, but at certain times lack of care is most disastrous, houses should be cleaned frequently at all seasons. Warm weather increases the degree of filth, and with it lice and mites appear. It is not all sailing on flowery beds of ease. If those who are climbing the ladder of success or nearing its top in the poultry business would tell of the failures which led to their present position (success without some failures are very rare), there would be fewer people going into the business one year and dropping out the next, disgusted with the whole thing. If they had known what to expect, the probability is a less number would make the venture, and those who would would more than likely make a success of it. As it is, most persons get an idea, after reading some glowing account, that poultry business is all sunshine. This is all right until after they have made a trial, then it is altogether different. In my experience I have seen enough to convince me that it is not all sunshine. I do not say this to discourage anyone intending to enter the poultry field, but rather to encourage and point out the difficulties that are sure to present themselves. Poultry are not hard to raise if you only use common sense. There is no *success* without great *labor*, and no one should go into the poultry business expecting to sit by the fire, turn a crank and raise all kinds of poultry. There is no occupation that requires more nerve and ability to look after all the "little details" than the poultry business. "Labor conquers all" is a proverb as old as the hills.

There are poultry raisers on all sides who get into careless "slip-shod" habits of management that can result in nothing but failure. One must exercise "eternal vigilance," and study the life and habits of fowls. It is surprising how little the majority know of the life, habits and requirements of their own flocks. Yards are as bare as use can make them, and houses the same. The feed given them in winter is corn for breakfast, dinner and supper. This is thrown on the bare ground with ice-water to drink. Under such circumstances poultry go to roost in a half frozen condition, shiver through the night and the next day the owner wonders why he did not get eggs when the hens had all the corn they wanted. A knowledge of chemistry and science goes well in the poultry yard. We should have faith in our business and own ability, work with eyes open, and strive for a purpose, an objective point. If any man who has been at all successful in any stock line would only stop to think that should the same energy and thought be devoted to the poultry business that is given to that of any other class of live stock the profits can not help but be satisfactory.

Some farmers claim there is nothing in poultry, yet they would not be without chickens. A man whose chickens are found on the warm side of a barbed wire fence is the one who swears that poultry does not pay. "Is there money in poultry keeping?" is a question that is often asked. One person was known to reply that there was because he had put it there and had never been able to get it back again. But I can say that I know there is money in poultry because I have gotten money out of it. Keep an account. A person who can't go to that much trouble is too indifferent to ever succeed in anything. A person should never go into this business who is too lazy to do other kinds of hard work. Keep an account of all poultry expenses, so you can tell how much profit there is in it.

## POULTRY RAISING ON THE FARM.

The raising of poultry is a business that has not yet received from the public the attention it deserves. Nearly every branch of trade is over supplied with workmen. The business of poultry raising opens a promising field for all who possess ambition and industry. The cost of raising poultry is small when compared with the high prices they command. For the small amount of money required I know of no other legitimate business that will bring quicker and better returns than poultry. It is a sure business when one understands it, because you can generally control the conditions which assure success if you will but attend to it. There is money in poultry and will be for years to come. The fact that many fail to make a ''go of it'' is what makes it profitable. The products of the poultry farm always represent so much cash. The demand is greater than the supply, and so long as this is the case the careful hard-working man or woman will reap the results while the indifferent will fail. Where one fails another is successful. Out of the same soil wheat and tares are produced. One presses forward to a definite aim, the other drifts here and there on the waves of circumstances. So our poultry operations may prove successes or failures in proportion to the amount of zeal and energy put forth. The conditions and circumstances surrounding different persons make it impossible for anyone to lay down fixed rules that would be a sure guide to those who seek fame and money; everyone must work out his or her salvation. There are thousands of poultry keepers in the United States no two of whom possess the same degree of skill. I have a way that is a way of my own, and it may not come up to what a great many of you have experienced. Nevertheless I get good results and that is what we are all after. One of the few trades in which the demand for skilled labor is in excess of the supply is that of the poultryman. The public never has enough poultry. There never was an over production of eggs in this country and it is not likely that there ever will be. The hen may not be a mortgage lifter, but given a chance, she'll scratch one badly. To keep the hens in laying condition is the aim of every poultry raiser, particularly at this season, January and February, when a full egg basket means so much. There are people sufficiently versed in henology to make biddies lay during cold weather when eggs are high. There is little profit in keeping hens unless a part of the eggs can be produced in winter and winter prices received. Some remark, "Oh! I am not particular about getting eggs in winter. The hens will do all the better in the spring by not laying now." If we assume that the heavy layer's eggs are unfertile because of heavy laying, we are just as far from the fact as the statement that the poor layer's egg are unfertile because of the few eggs laid.

The hen that lays eggs that are worth from twenty-five to thirty-five cents per dozen is the hen to breed from rather than the hen that lays eggs that are worth only twelve to fifteen cents per dozen. One could not expect a hen not bred from a heavy laying strain to lay well as to expect the common cow to yield the same amount of butter-fat as the pure-bred Jersey. The strain must be back of the flock. It is possible by selection, careful breeding and scientific feeding to double the number of eggs which the hen will lay. Give the hen the right treatment and she will repay every kindness if she is the right kind. Feed for eggs. If she does not respond to the music sell her and get the right kind.

The State agricultural stations in many states have conducted experiments and have proved that it is possible to make each hen pay a profit of $1.50 to $2.00 per year. There are a number of egg farms that make more than this, because they can raise their own feed on a few acres of ground.

No other problem in our poultry experience has been so difficult of solving as how to feed. What to feed and what not to feed. There are two things necessary to produce large quantities of eggs. First, proper food and care; second, a strong constitution, one which will enable the fowls to digest and assimilate a large amount of food.

The moulting season of the hen is about as good an indication of her vigorous constitution as can be found. If she moults in a short time and scarcely stops laying at all she is worthy of being selected as the mother of a great nation and can be safely bred from. If she takes a long time to moult, is ''off her feed'' she is weak, and the sooner you get rid of her the better. Breed from her and your stock will soon ''run out.''

In feeding for egg production a valuable lesson may be learned from nature. If we notice fowls that receive the least care and attention laying most of their eggs in the spring time notice the conditions surrounding these fowls; the weather is warm, they have plenty of green food, more or less grain, insects, plenty of exercise and fresh air. If we feed for egg production we will endeavor to make it spring time all the year round. Provide a warm place, not warm by artificial heat, but made as warm as possible, give the poultry proper proportion of green food, such as vegetables, grain and meat (milk in various forms will take the place of meat), grit, fresh air and plenty of exercise. A great many make a mistake in feeding too much corn. Get a chemical analysis of the egg and various foods, study them with an eye to the demands of your flock and cost. This will keep you figuring a day or two perhaps. Then judgment is a good thing to mix the food with. Chickens should be made to work for every grain they get. To make them do this throw it into a deep litter. Chickens, like people, do not thrive and relish on a perpetual diet of the same kind of food year in and year out. If those who fail to get eggs will try the bill of fare they will be amply paid for their trouble, and there will be no need of asking ''Why don't my hens lay?'' I can not say that I have solved the problem to my satisfaction, but I have received a good supply of eggs all winter.

Laying hens in winter require extra care and attention. Where a great many people fail is in not properly protecting their fowls from sudden changes of the temperature. Weather conditions are very changeable, especially here in this neck of the woods where no two days are exactly alike. Watch the thermometer while you are working for eggs. It is not the extreme cold weather that checks egg production, but the sudden changes which in nine cases out of ten may be avoided by a watchful poultryman. Keep the hens in their houses when the thermometer gets to zero and lower. Care of poultry in winter is no small affair and when properly done the results will be beyond expectations.

## THE INCUBATOR.

An incubator is today as much a necessity in the poultry business as the poultry itself. You might just as well try to run an egg farm without hens as to try to raise chickens without an incubator, or cultivate corn without a cultivator. Incubators have been used for thousands of years. In Egypt they are made of mud in the form of a large oven and the heat is kept up by a furnace fire. If one expects to have the early spring chickens to catch the welcome half dollar he will be compelled to use an incubator.

To raise chickens with an incubator is a business. An incubator is not a plaything to be looked at when you see fit. If you wish to hatch chickens with an incubator and be successful you must make up your mind to study and work. You must look after all the details, you must have a suitable place to locate the machine. ''Any old'' place won't do. You need a room where the temperature will not change too fast. We have found a good dry cellar to be the best place. Access to plenty of fresh air, as fresh air is very important in hatching chickens. The impression that an incubator requires a great deal of attention is without foundation. This is true of sitting hens, twenty or thirty hens sitting on eggs require a great deal of looking after and good management, or the production of live chicks will be very disappointing. Do not commence to operate an incubator until you thoroughly study the instructions that come with the machine. It requires patience, attention, common sense and a certain amount of experience to manage an incubator or anything else successfully, even the most perfect and easily operated ones. The machines can not do it all, but the operators must do their part. Use common sense and you stand an equal chance with others for success. Do not expect too much at first. If you fail to secure the best results from your incubator or brooder at first, or to produce as many chickens as you should, don't give up in dispair, try again. Did you ever think the fault may be in you and not in the machine? It may take a great deal of time and work to get this fault out of yourself, but keep on and if the fault is yours it will in time give way to success.

Those who have raised chicks with old hens know the trials attached; you waste time to see whether they are in earnest. When a hen will she will, and when she won't she won't. The incubator saves this time, it is willing to set when wanted. A hen is valuable when she is making some returns for her care, therefore, she hasn't time to sit three, six or nine weeks out of a year and spend almost twice that much time looking after her chicks. Nowadays a hen's business is to lay eggs and when not at that, recuperating for business. A hen can't lay all the time, but nature has arranged a time during moulting when they can rest. Fully eighty per cent of the eggs are now hatched in incubators. Buy an incubator, don't worry with broody hens. Buy ''a good one,'' use common sense in running it and it will be a source of continued profit and satisfaction.

People think that all the chicks that die in the shell are the cause of the incubator, that they don't do that way when set under an old hen, but they do. The question is often asked, why do chicks die in the shell? No one knows. Let us remember it is not the hen that hatches the chicks, it is the heat, no matter from what source the heat comes. Cases are on record where chicks have been hatched from the heat of a manure pile. Ostriches and reptiles deposit their eggs in the hot sand and leave them there to be hatched by the sun.

After an egg has started to incubate the germs may perish at any stage from lack of strength or of any other cause. It is subject to disease and weakness the same as any other living organism. The principal cause is attributed to the fluctuation of the temperature, such as overheating or a lack of a sufficient amount of heat. A high temperature causes many chicks to die. This death may not be sudden, but they will die before the hatch is complete. The stronger the vitality of the egg the more apt are chicks to hatch and live. Many operators think they have kept the temperature as near perfect as it is possible and yet there are conditions which will upset all calculations. Thermometers are not accurate; the thermostat is out of order, the flame of the lamp is subjected to differences in the atmosphere, and is thus permitted to go wild and the distribution of the heat in the egg chamber becomes irregular. The germs of life will not live if started at too high or too low a temperature. Place two or three thermometers in the same machine and regulate the heat according to the average of the same. Ventilation is also a cause of much trouble, a lack of which kills lots of chicks. Follow closely the instructions which come with the machine in regard to turning, testing and cooling the eggs.

## BROODER CHICKS.

In raising brooder chicks, perhaps the first important thing is to have a handy spot to be used as a cemetery. Next a brave spirit; don't get discouraged when you find the chicks dropping off one, two or a half a dozen a day. "Don't get blue." There may be some here who think there is no need of a "cemetery" or "blues" and that chickens brought up as they should will not die. That is true, but how many raise a flocks of chickens from the incubator to a marketable age? Such cases are so rare that they serve as a glowing account for the newspapers, where the innocent are encouraged to go into the poultry business where will be found plenty of money and an easy occupation. Such glowing accounts also have a tendency to "discourage" the amateur already in. If we have discouragements and failures that would paralyze most people, discouraging times, hard work with chickens when everything seems dark, blot them out and start over again, try and win through the rough school of experience. The tuition often comes high. Our watchword should be, "What man has done man can do." There is much in the past that can be used as object lessons and guides for the future. It requires more of an expert to count the chicks (the same number) when ready for market than it does to count them before they are hatched. There are reasons for this decrease in numbers but it does not seem so large until the season is over, then it is too late to mend. By another season the troubles are forgotten and many go through the same experience as before.

I believe that not one-half of the chickens hatched reach a marketable age. Their death is caused by poor management and a lack of knowledge of the business. Most chickens are given their liberty on the farm where all sorts of dangers are lurking near, such as rainstorms, rats, skunks, hawks, etc., and then it is all laid to bad luck, which has had a good many things laid to it that never belonged there. Each dead chicken represents a fifty-cent piece. If every poultry raiser would keep in mind that every dead chicken represents so much loss, so much less cash returns, he would take more pains to prevent the losses.

Brooding chicks by artificial means is an art, but with the best of appliances it is fully as successful as with hens. People have said what a task it is to look after your young chicks. I do not consider it such a task since learning how to use common sense and system about the work. Chickens grow and thrive even while we sleep. Just before leaving the shell the chick draws into the body the whole of the unabsorbed yolk of the egg. This is its food before and after leaving the shell. It must be exactly right, as nature never errs. It is the food nature provided to sustain life until the chick is strong enough to take other food. Chicks should not be fed until forty-eight hours old. If fed too soon or too much the yolk of the egg which it took into the body before leaving the shell will not be drawn upon; it will remain unabsorbed and in time decompose, causing bowel trouble and death. The greater number of chicks which die of bowel trouble do so at about a week or ten days of age. If you will open one of the chicks, nine cases out of ten you will find decomposed yolk in the yolk sack.

Chicks normally hatched and given almost any kind of care will live and seem to thrive for the first week, then the trouble begins. The critical period in the chick's life is the first two weeks. Starting the chicks right is half the battle. When they have arrived at three or four weeks old they have nearly passed the dangers of chickendom. One great danger is overfeeding. The young chicks require but little food for the first few days of their life. Their digestive organs are not strong, and by overfeeding it overtaxes the digestive system and bowel trouble results. Improperly feeding chicks, especially for the first two weeks, unmakes more would-be poultrymen than any other one thing in the whole business. It is the foundation of all disease. It is essential that chicks should be well born. There is no mystery about feeding chicks. It is easy and only requires common sense. When this is lacking better tackle something else. Chicks die of "too high living." No matter what the feed, be careful to just supply the need of the chick. Better keep them just a little hungry than to feed too much. After the chicks are a few weeks old they will be able to stand more feed. Failure in brooder chicks is due to the care given them. In most cases it is wretched. The more care you give them the larger the returns. Lice prey upon the chicks if brooders are not kept clean. They should be cleaned every day. When lice and mites are present you feed in vain. "Verily, the path of the brooder chick is strewn with thorns" if you do not give them constant care. As has been truthfully said, "It is one thing to hatch the chicks, but another to raise them." I don't claim to know it all; far from it; but there are a few things that I have found out through sad experience and that I can properly claim as my own.

I shall endeavor to give a synopsis of the method I have found to be the most successful. The only right way to start is to start right. The breeding stock must be healthy and vigorous. If this is not the case you had better quit before you start. There are a number of good brooders on the market. We have used the Successful and are content to let well enough alone. Don't put more than seventy-five or one hundred chicks in a brooder of any size. If you have a brooder as large as a house and more than this number are placed therein they will crowd, then your troubles will commence. We have three brooders. After the chicks are ten days or two weeks old we remove them froom the brooders and place them in boxes in numbers of fifteen or twenty. As they grow older we decrease the number in the boxes. I find they do better handled in this way than when left in the brooders.

First the chicks are placed in the brooders, the floor of which is covered by newspapers and on the paper is placed about an inch of chaff from the hay loft, and the whole made warm and dry before chicks are placed in the brooder. Into this chaff I scatter a handful of oatmeal, bread crumbs or ground wheat, sharp sand or powdered eggshells, also a little charcoal. This will prepare them for their first meal. I prefer the dry method of feeding. Almost anything of a vegetable nature is good for feed after the chicks are a week old if it is properly prepared. Chicks should have grit, charcoal, and water from the start. One of the main points in raising brooder chicks is to keep them active. Throw their feed in the litter. Make them work for it, for exercise is the only method to develop muscle and make a strong healthy chick. My chicks receive very little corn at any age, but they do get ground oats, wheat, rye and plenty of exercise.

A few advantages in raising brooder chicks are: You can raise larger numbers, and in case of danger of storm you can call them and they will run and fly to you; in a few seconds you will have them under control, whereas it would take you a long time to drive them to a place of shelter and lots of them you could never drive up before they got wet and chilled.

Let us all look into the poultry question a little closer and try to give it the same consideration and preparation to importance that is devoted to other kinds of stock.

## RAPE AND KALE FOR POULTRY.

*Gustave Thommen, in Farm Poultry.*

Many people to whom, in talking about green food for poultry, I have mentioned rape, have either never heard of the plant or have had poor or no success at all with it.

This is unfortunate, as it deprives them of the benefits from a source of green stuff especially adapted for summer and fall use. Moreover rape is very easily and cheaply raised after one has come to know how. There are a few little points to be observed in its culture, and it pays well for all the labor spent on it, besides being about the best and cheapest green stuff for either growing chicks or laying hens. The fowls relish it greatly, and do not get tired of it. Rape also grows so fast under proper management that it is almost impossible to use it up as fast as it comes along.

Where the cabbage maggot is at home (and this seems to be the case everywhere) there is positively no use to sow rape or kale before the 15th of June, unless one will run the risk of having one-half to three-fourths of the crop destroyed by the insect, which lives in the upper part of the root, just below the surface of the ground, and eventually kills the plant. After the above date the insect is mostly done with its work, and the coast is clear.

The seed of rape is quite small, smaller than turnip seed. The sort to use is Dwarf Essex rape, sold by all seed houses at about ten cents a pound, and one pound will sow about one acre. Sow in any soil which will raise a good crop of cabbage or potatoes, and which has been perfectly prepared to receive such small seed. Sow rather thin, six to eight seeds to the inch, and cover lightly, not over one-half inch. Be careful not to sow thicker or deeper. If sown more thickly the young plants, which grow very fast from the start, will smother each other, unless thinned out very soon. As every seed sown will sprout, it saves lots of trouble if the sowing is done as mentioned.

In four to five days the young plants are up, and right after this a wheel hoe ought to be run as close as possible on each side of the rows. Do this on a warm day and all the small weeds that have started are done for. This is generally all the cultivation needed, unless the land is badly infested with weeds. The seed is best sown in rows two and one-half feet apart. In three or four weeks the plants will be four to six inches high, and from now on are ready to be used. I start in to thin them to about three inches apart, and while they are so young and small I feed them just as they are, roots and all. The remaining plants grow fast now, and by the time the last thinnings are used up will be ready for more room. Space them now to six inches. These thinnings and everything from now on should be cut into suitable lengths for the fowls, say one-quarter to one-half inch, so as to save and make use of the whole plant, as by this time the stems are long and thicker. The stuff is soft as cheese, and cuts very easily; it takes not more than five minutes to cut up a bushel of it.

After this second thinning, which leaves the plants at about six inches apart, and as they grow bigger, I begin to cut every other plant above the third or fourth leaves. These shortened plants, which now stand at one foot apart, will sprout again, and will be ready for another cut by the time those that have been left are used in the same way. I can always, on good soil, get two or three cuttings in this manner, and it is astonishing what an amount of green food a little piece of ground will raise. As I said before, the plants will grow faster than one can use them up. Rape will grow fast and rank, even in very dry seasons, on good soil.

Fowls of every age and description are fond of rape, and thrive on it; so do cows and sheep or pigs. I have often wondered why farmers in general do not use the plant more. But very few have ever heard of it or seen it. Some of my neighbors, whom I induced to try rape, were surprised by its rich and fast growth and ease of cultivation. They sow it very thin as described, and begin to cut it when about a foot to a foot and a half high. By cutting above the lower leaves they get two or three big crops, and one acre will easily furnish green stuff for three or four cows during three months just when pastures begin to grow thin.

Rape will stand some frost, and can be used into November. By sowing in succession four or five weeks apart a poultryman has all the green he may wish for. I am keeping about four hundred fowls, and by sowing at three different times four rows one hundred feet long each time, I have always plenty of green stuff with little effort or expense. I use every day about three solid bushels of cut rape. A clover or hay cutter will cut it easily and to perfection.

Now as to kale: (Curly Scotch winter kale is the best.) This is another valuable and easily raised plant, which is not grown as much as it deserves by poultrymen. It grows almost as fast as rape, and can be used and handled in the same manner. But it will need twice as much room in the row, and should be thinned first to six and then to twelve to sixteen inches. The plant is practically winter proof, and can be left out and used right from the field till New Year's, long after every vestige of any other green stuff has gone by.

I sow kale about the 1st or 15th of July. By raising a few rows of kale and having the use of it till January, a poultryman will save many a bushel of roots, and will keep his fowls in good condition. The heads of kale or rape may be hung up in the pens so that birds can help themselves, but by cutting them up, stems and all, a good deal more will be gotten from them.

## CARING FOR DUCKS.

*Miss Florence Ford, Moran, Kansas, in Poultry Culture.*

I have seen and read so many letters on chicken culture and how much profit they are to the farmers and must say all is true. But then we seldom ever see anything said of the poor old duck. Ducks are much like geese, they are more often condemned and despised, then praised. Not many good words are spoken of them especially by the men. Although they furnish us good, soft pillows and nice downy beds to lie on when our days work is done and we are so very tired. Then, besides all this, think of the eggs we get from them when they are properly cared for. Ducks always bring a very good price on the market, and they destroy great quantities of insects and crawfish. They work for their own living when there is anything to be found and when in a healthy condition. Our ducks are off as soon as they are let out of the poultry pen and are seldom seen around the yard until late in the evening unless the sun is very warm and the weather dry. Then they come to the shade during the middle of the day. This is an ideal duck season for old ducks as they are fond of water and they can have plenty to swim in this season. But while ducks are fond water, they should have good dry roosting places with dry floors, as damp cold houses are death to them. We have found while water is very essential for duck raising they would be better off if not allowed to have water to swim in all the time, especially before feathered or when very small. We have also found the best way to treat the young ducklings is to keep them in a pen free from water except what we give them, feeding four or five times a day or oftener if necesary, until they are well feathered and made to roost in a dry house at night, free from dampness, as ducks are just as liable to take roup as any other kind of fowls and when once a flock is attacked by that dreaded disease they are never so strong again, but they may seem to be all right. It will crop out in the next generation. I have always found it is "easier to avoid the disease than to cure it." We had a small flock of ducks two years ago, and when fall came they were strong and healthy. The following winter was cold and wet. Our ducks were compelled to roost in a damp poultry house all winter. During the winter the drake took cold in his eyes and seemingly had a slight attack of roup. We kept him for breeding purposes and the next spring thought we would raise by the dozen. ''Counting our ducks before they were hatched.'' We saved every duck egg and set. But to our surprise so many of the eggs were not fertile and those that were were such weak little ducks we had to help them out of the shell. Some of them grew real well, while the growth of some of the others seemed to go into their beaks, they being the size of a full grown duck while the body would not have weighed a pound. All this trouble came from the weakly parent ducks. Ducks are easily raised when in a healthy condition, but if they are weak little ducks when hatched they never outgrow and always remain small. Then we have to look out for the white clover fields. As every one knows the honey bees claims all the white clover and they are not willing to be bothered in their busy season of honey making. As the little ducks are found of all kinds of insects they are soon to be seen chasing the bees at a rapid pace, catching one if they can. But just as sure as one catches a bee it is sure to die. I have seen ducks die in ten minutes after it catches the bee, its ''deadly enemy.'' It seems as though the sting of the bee causes the throat to swell shut in a very short time, the little duck sits down, stretches its little head out and dies. Old ducks either learns to let the bees alone or their throats become so toughened that the sting of the bees does not hurt them.

## TURKEYS.

### STANDARD VARIETIES AND MANAGEMENT.

*T. F. McGrew, New York City, in Farmers' Bulletin No. 200, United States Department of Agriculture.*

#### PRESENT CONDITION OF THE INDUSTRY.

*Recent improvement.*—The growing of turkeys seems to have improved within the past few years as a result of a determined effort on the part of producers of what is termed standard-bred, or exhibition, stock to demonstrate that it is more profitable to use pure-bred breeding stock than the smaller and less vigorous stock of days gone by. Their efforts to introduce throughout the country the several standard varieties of turkeys has greatly benefited the turkey-growing industry of this country. This effort has supplied rich, new, vigorous blood throughout the whole country, adding strength and vigor to innumerable flocks, and thereby, to some extent, building up the stock that had become deteriorated through the carelessness and inattention of the producers themselves.

*Deterioration through inbreeding.*—The fact that one fecundation is sufficient to render fertile all the eggs of one laying has made possible the undermining of the health and vigor of the present-day domestic turkey. Being advised of this, hundreds of people depend upon their neighbors' flocks for the services of a male and pay no attention to the matter of breeding stock except to keep one or two turkey hens. This has reduced many of the turkeys throughout the country almost to a condition of imbecility. The lack of vigor in a large portion of the breeding stock throughout the country has jeopardized to a certain extent the production of a sufficient number of market turkeys to supply the demand. In fact, not fully realizing that their failure was largely due to undermining the vitality of their breeding stock through inbreeding, people have become so disheartened in some localities with the meager results of their efforts to grow turkeys for market that they have desisted from the attempt.

Throughout the country the attention of turkey growers has been called to the successful production of market turkeys in the State of Rhode Island. Unquestionably some of the best market turkeys produced in the world have been sent out of Rhode Island. But even there the art was in danger of being lost through careless handling of breeding stock. If those most interested in the turkey crop of that State had not put forth an unusual effort to introduce plenty of new, vigorous stock, they would not have been in a much better state at the present time than growers in many other localities.

There never has been a more active demand for market turkeys than during the past ten years, and there is no reason why this should not increase very materially in the next few years as a result of the growth of population.

## STATISTICS OF PRICES AND PRODUCTION.

*Recent prices.*—The market statistics show that there has been an active demand for turkeys for many years past. The records of the winter of 1903-04 perhaps show the highest prices that have ever been paid for the turkey crop, which seems to have been considerably less in proportion to the demand than for several years past. The wholesale prices paid in the Western States ranged from ten to fifteen cents a pound, dressed, with the head, feet and entrails. The average wholesale price as recorded in New York for the past ten years has ranged from eight to twenty cents a pound. Boston shows a valuation higher than this in a few instances only, and the Chicago market has recorded from six to eighteen cents. In considering these figures one must always remember that the best quality of stock can always be sold at good paying prices, while for poor, ill-favored stock one must accept whatever price can be got.

*Census of 1900.*—The census of 1900 shows that, with a little over five million farms in the United States, not much over six million five hundred thousand turkeys were produced. Among the States, Texas is in the lead, having produced almost six hundred and fifty thousand turkeys. Following Texas comes Missouri, Illinois, Iowa, Ohio and Indiana, in the order named. The State of Rhode Island produced less than five thousand turkeys. It may be remarked, however, that if all the turkeys were of such good quality as those produced in Rhode Island, their value would be nearly doubled and they would return correspondingly greater profits to the growers. It is quite as easy to grow turkeys of superior quality as it is to grow those of inferior quality. Rhode Island turkeys sold at retail in the markets of New York City and Boston during Thanksgiving and holiday weeks of the past winter for as high as thirty-eight and forty cents a pound, while other turkeys could be bought at twenty to twenty-five cents. This gives some idea of the willingness of the people to pay a good price for the best.

### PROFITS OF TURKEY GROWING.

*Cost of production and chance for profits.*—It is claimed that, in the West and the Southwest under ordinarily good conditions, turkeys can be grown and sold at eight to eight and one-half cents a pound, live weight, and return a profit to the growers. When the possibility of an advance of three or four cents per pound is considered it will readily be seen that there is a chance for good profits. In addition to this there is an opportunity for smaller growers who live near towns and villages to dress and sell their turkeys to private customers at the local retail prices. All admit that, if it were not for the unnatural losses that have been sustained in the past few years, much more profit could be made from growing turkeys. These losses are largely chargeable to conditions that may be removed by following the laws of nature in selecting and pairing the breeding stock.

*Turkeys compared with other live stock.*—There is no other kind of live stock that will return so large a profit to the successful producer as will poultry, and no kind of poultry is more profitable than turkeys when properly handled. The fact that turkeys will, from the time they are six weeks old until winter sets in, gain the greater part of their entire living from bugs, grasshoppers, and waste grain that they pick up in their wanderings over the range, assures their existence through this period at little or no cost to the grower. In other words, they may be termed self-sustaining foragers where they have sufficient range.

*Increased demand for turkeys.*—The chance for profit in the production of turkeys is gradually improving as a result of a more general use of the flesh. They are now used not only for roasting, but to an increasing extent as cold cuts for sandwiches and for salads, and large numbers of poults are used for broilers. Late-hatched poults do well for this purpose, and, while there can not be much opportunity for growing poults to maturity when they are hatched late in the season, they may be sold for broilers at a good profit. No dish is more valued in our large cities at the present time than the broiled poult.

*Preferred weights for market.*—Turkeys that are hatched early in the spring should grow to weight from fourteen to twenty pounds by Thanksgiving week. These weights are often exceeded by the best growers, but as they are the most popular and most readily produced, they are suggested as the most advisable. The average yield of turkey hens is from eighteen to thirty eggs, each of which can usually be counted on to produce a living poult. The question of profit from keeping turkeys simply resolves itself into the ability of the grower to bring them to a marketable size. This can readily be done if care and attention be given to all the requirements for success.

## THE STANDARD VARIETIES OF DOMESTIC TURKEYS.

The Spaniards have the credit of taking the turkey from Mexico to Europe. Mr. Dixon says that they first reached England in 1525. From the Mexican variety the turkeys of England were bred, and what is known in England as the Norfolk variety we call the Black turkey. Quite likely this variety came from England to us, and was used as the foundation for the cross with our wild turkeys to establish or create the Bronze turkey. Audubon says that to his own knowledge the wild turkeys would come from their haunts and feed and breed with the domestic or tame turkeys, and the half-bred birds were finer in size and hardier in constitution than the domestic stock. To this day we strengthen the blood line of our Bronze turkey by making a cross with the wild turkey. The influence of the light markings of the Mexican turkey is shown in the plumage of some of our domestic varieties.

*Six standard varieties.*—Six standard varieties of turkeys are more or less grown in this country, viz: Bronze, Narragansett, Buff, Slate, White, and Black. The main differences are in size and color of plumage. The Bronze and the Narragansett are the largest, the Buff and Slate are the medium, and the Black and White the smallest. Of late so much improvement in size has been made in the Whites that they have moved up to contend for third position, some of them having passed the thirty pound mark. The same statement may soon be made of the Blacks, as they have greatly improved during the last few years.

In addition to the foregoing there is a nonstandard variety known as the Bourbon Reds. They might well claim the position now held by the Buff turkeys, being quite like them and more largely grown for market than are the Buffs. There is scarcely enough preference shown in the open market for any one of these varieties for table use to cause it to be favored in production of turkeys for market. There is, however, a strong preference at all times for the best grown and best finished specimens of all varieties. In Rhode Island, where the highest quality is produced, there does not seem to be much preference for any particular variety.

*Origin of varieties.*—Our domestic turkeys have all been bred from the wild turkey of the United States and Canada and the wild turkey of Mexico. Climatic conditions have prevented the Honduras, or Ocellated, turkey from playing any considerable part in bringing the domestic turkey to its present state of development. The wild turkey of North America has for the most part been used as the foundation from which size and vigor in our domestic stock have been gained. The lighter shades of color found in the Mexican turkey may have lent their aid in the markings of the Narragansett. As to the origin of the White variety, nothing that may be classed as authentic is recorded. The Blacks may have come from either of the wild varieties as sports, and the same may be said of the Whites. We know that white individuals have come as sports from both the Bronze and the Narragansett varieties. Such sports do not have the pink shank that is demanded in true-bred Hollands, but, when crossed with them, may be brought within color demands through selection.

### THE BRONZE TURKEY.

*Origin and size.*—This variety holds the post of honor. As already stated, it probably originated from a cross between the wild and the tame turkey. Its beautiful rich plumage and its size have come from its wild progenitor. To maintain these desirable qualities, crosses are continually made. In this way the mammoth size has been gained. Their standard weight ranges from sixteen to thirty-six pounds, according to age and sex. Probably more of this variety are grown each year than of all others. They have been pushed on all sides almost to the exclusion of the others until within a year or two. If possible the Bronze turkey has been developed too much in the direction of size. While size, within reasonable limits, is to be desired and encouraged, when it is confined to length of thigh and shank, it is a gain of weight with but little additional value.

*Coloring.*—The coloring of this variety is a ground of black blazoned or shaded with bronze. This shading is rich and glowing, and, when the sun's rays are reflected from these colors, they shine like polished steel. The female is not as rich in color as the male, but both have the same color and shadings. Much of this richness of color is lost through inbreeding, as it is improved by each cross with the wild specimens. Of all our domestic fowls none suffer from inbreeding so much as turkeys. This should be guarded against at all times, if it is hoped to gain the best results.

*Selection of breeding stock.*—Naturally the Bronze turkey should be the largest in size, the most vigorous in constitution, and the most profitable to grow. This would be the status of the variety at present were it not that too little attention has been given to the selection of females for breeding stock. It should be fully understood that size and constitutional vigor come largely through the female, and, to have this influence to the fullest extent, well proportioned, vigorous females in their second or third year should be selected as breeders. Do not select the very large specimens for this purpose; those of a medium size are usually the best. Discard the undersized females at all times, as they are of little value as producers. Length of shank and thigh, if out of proportion, should not be mistaken for size; full-rounded body and breast indicate value most clearly; size and strength of bone indicate constitutional vigor, which should be maintained through the selection of the very best at all times for producing stock. When special care is given to the selection of the breeding stock, and the grower bears in mind those profitable market characteristics—compactness of form, length of breast and body, and constitutional vigor—the most satisfactory results may come from the growing of this variety. But no matter how much care may be given these conditions, only partial success will come if inbreeding is permitted. The use of oversized males with small females is of less advantage than the use of smaller males with well-matured, medium sized females.*

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*Often the overlarge male will so lacerate the skin and flesh of the female as to necessitate the stitching up of wounds to save the hen turkey. This danger may be largely removed by trimming or filing off the sharp toe nails of the male just prior to their mating in the spring.

### THE NARRAGANSETT TURKEY.

*Coloring.*—The turkeys of this variety are next in size to the Bronze. They are of black ground color, each feather ending with a band of steel gray, edged with black. This imparts a grayish cast to the entire surface plumage. Mixed with this is the finish of metallic black and bronze luster. They are beautiful in form and feather and breed true to shape and color. The female has a lighter shade of gray in her markings than the male. Her entire color throughout is of lighter shading.

*Size.*—The standard weights of this variety are, for males, from twenty to thirty pounds, according to age; for females, from twelve to eighteen pounds. Some old males of both this and the Bronze variety weigh over forty pounds. These weights are excessive and of but little advantage in breeding; medium sized males and females are more valuable for producing stock. None of the several varieties of turkeys is more desirable than this for all purposes, and it should be more generally cultivated throughout the country for market. Turkeys of this variety are fine in form of breast and body, not so long in the leg as the Bronze, and of a rather more contented nature. They do not average so large in size as the Bronze, but where grown they are highly valued. Some declare that the Narragansetts will reach market size and condition in less time than the Bronze turkeys, but the writer has not been able to ascertain the truth of this statement.

### THE BUFF TURKEY.

This variety is not generally grown throughout the country. In many localities it is almost unknown. The standard calls for a pure buff color throughout, but this shade of coloring is seldom seen. As bred for market, these turkeys are of a reddish buff or light chestnut color mixed with white and some dark shadings. They are highly valued in some localities for their quick growth and for their attractiveness when dressed. There average weight is several pounds less than that of the Narragansett. They show evidence of having been crossed with other varities, perhaps to increase size. Some who raise this variety have paid special attention to its individuality and have maintained the true type and color, adding greatly to its beauty of appearance. Some of the Rhode Island growers are paying attention to this variety of late, in order to determine its value as compared with others.

*The Burbon Red Turkey.*—A kin to the Buff, in color at least, is the Bourbon Red. This variety has been known by the names Bourbon Red, Bourbon Butternut and Kentucky Red. It is claimed by some that it was originally a wild form found in southern Iowa, Missouri and northern Arkansas. It is not yet recognized by breeders as a standard variety. In color it is dark or brownish red, with white in wings and tail, tips of feather bluish bronze, undercolor almost white, in some cases buff; in average weight almost equal to the Bronze variety. It is claimed that it excels others in richness of color of flesh and skin, also in fullness of breast. This is not true to any marked degree. It is a strong, vigorous variety, worthy of consideration with others, but does not have any unusual features of excellence.

### THE SLATE TURKEY.

The Slate turkey might be called a Blue turkey. These turkeys about average in size with the Buffs and Blacks as we generally find them. They range from ten to twenty-five pounds, according to age and sex. The standard weights range from twelve pounds for a pullet or young hen to twenty-seven pounds for an old tom, and in color they are slaty or ashy blue throughout, usually spotted with black. The black color ranges from small spots to larger markings, but the less of this the better for exhibition purposes. The female is usually of a lighter shade than the male. It might be surmised that the Slate turkey originated from a cross of White and Black turkeys. These, like the Buff turkeys, are not largely bred, though some value them highly; in fact, scarcely enough of them are grown to fairly determine their merit as market turkeys. It might be of advantage to all if more attention were given to the cultivation of these two neglected varieties.

### THE WHITE TURKEY.

*Origin.*—In America the White variety is called the White Holland turkey. The reason for this is not apparent, though some think it is so called because it originally came from Holland. While white turkeys may have been brought to this country by Hollanders, they are not natural to Holland. In English works they are referred to as "Austrian Whites." They have been known in England for over a hundred years, and are considered sports from other turkeys, which is more than likely the correct view. White turkeys were formerly quite delicate and rather small, but now are more generally developed. This change is attributed to an infusion of the blood of White sports from either the Bronze or Narragansett varieties, which has improved both size and vigor, but detracted from the color of shanks and plumage. In some instances the shanks are not quite so true a pinkish white as is demanded, and the plumage is clouded; but this in no way detracts from their value for market purposes.

*Size and color.*—The standard of weight is less for the Whites than for other varieties. They range from ten pounds for young hens to twenty-six pounds for old toms. Recently some toms have been seen that weighed thirty-five pounds in show condition, but this weight is quite unusual. In color of plumage they should be white throughout (except that each has a black beard on the breast), with shanks and toes pinkish white. Those that have the dark or slate-colored shanks show undoubtedly that they have resulted from a cross with some other variety.

*Comparative value.*—In some localities White turkeys are largely grown. They show a vitality equal to that of other varieties, and are no more difficult to rear. In one section visited the writer found by careful investigation that as large a percentage of Whites was grown during the very bad season of 1903 as of the other kinds. With some the Whites did the best. When the vigor is perfect and the mating birds nonrelated, the young of White turkeys are quite as easy to grow as any young turkeys.

One can not select a better variety for all uses than the White Holland. They grow to the most profitable sizes, dress beautifully for market, their light, pinkish white shanks add to their appearance, and with them, as with all white poultry, the pin feathers show less than in darker varieties. The very largest turkeys are not the most profitable either to grow or to sell. The medium sizes—from nine to eighteen pounds dressed—are most desirable for family use.

### THE BLACK TURKEY.

*Description.*—This variety was for a time almost forgotten and quite neglected, but of late more attention has been given it, greatly to its advantage and improvement along the lines of valuable market qualities. The Black turkey of today is almost as large as the Bronze and fully its equal in many ways. This is due to crosses made with Bronze turkeys, and to proper selection thereafter. This variety is much the same as the English Norfolk turkey. No turkeys are more desirable for table purposes. When dressed they present the yellow color of skin and meat and the plumpness and finish that are desirable. The Blacks round up nicely at an early age, are quite hardy, and mature in time for the early markets. They dress to the most salable sizes, and by Christmas the young stock, if properly cared for, will attain the live weight of from fourteen to twenty pounds.

*Characteristics.*—The Black turkeys, like the White, are more contented about home than most of the others, and while this is very desirable in some localities, it has its disadvantages in others where the large expanse of country furnishes suitable feeding grounds for the turkeys to forage over. The young are quite hardy when produced by strong, healthy nonrelated parents. When it is desirable to grow turkeys of the smaller sizes, and upon a rather confined area, one can not do better than select the Black variety.

### SELECTION AND TREATMENT OF BREEDING STOCK.

There are some rules that must be followed in the selection of turkeys for breeding, if it is hoped to succeed. Careless neglect has given no end of trouble to turkey raisers. In some instances which the writer has investigated, all the turkeys owned in one locality have descended from the one original pair purchased many years before. In one case it was said that for twenty years no new blood had come into the neighborhood. If this foolish procedure had been continued it would have resulted in the destruction of the constitutional vigor of the turkeys.

### RULES FOR SELECTING STOCK.

A few plain rules which may be observed to advantage are as follows:

*First.*—Always use as breeders turkey hens over one year old. Be sure they are strong, healthy, and vigorous, and of good medium size. In no instance select the smaller one. Do not strive to have them unnaturally large.

*Second.*—The male may be a yearling or over. Do not imagine that the large overgrown males are the best. Strength, health, and vigor, with well-proportioned medium size are the main points of excellence.

*Third.*—Avoid close breeding. New blood is of vital importance to turkeys. Better send a thousand miles for a new male than to risk the chances of inbreeding. Secure one in the fall so as to be assured of his health and vigor prior to the breeding season.

### PRACTICAL SUGGESTIONS IN REGARD TO BREEDING STOCK.

*Kind of hens to select.*—No matter what variety of turkeys may be selected for keeping, they should, above all things, be strong, vigorous, healthy, and well matured, but not akin. Better secure the females from one locality and the male from another to insure their non-relationship, rather than run the risk of inbreeding. In all fowls it is well to remember that size is influenced largely by the female and the color and finish by the male. Securing overlarge males to pair with small weakly hens is not wise policy.

A medium-sized male with good fair-sized females of good constitutional vigor and mature age will do far better than the largest with the smallest females. The wise farmer always selects the very best corn or grain of all kinds for seed; equal care should be given the selection of breeding stock in turkeys. The best raised on the farm should be reserved for producers, and the fact should be kept in mind that turkey hens of the best quality in their second or third year of laying make the best producers. Keep your best young hens with this in view. Under-sized hens that lack constitutional vigor are not of the least value for producing poults. The medium-sized, well-formed hens that have good strong bone and constitutional vigor are the kind to select for successful turkey growing.

*Kind of males to select.*—When we stop to consider that the male turkey is one-half of the entire flock in the matter of breeding we may be led to greater care in his selection. None can be too good for the purpose; constitutional vigor is of first importance; without this he can not have any value whatever for the purpose intended. Plenty of bone, a full, round breast, and long body are important. No matter of what stock or breeding the hen may be, the male should be selected from some of the standard varieties. He will carry with him the influence of his breeding. If the hens are of some standard variety, a male of the same variety should be selected so as to maintain the stock in its purity. Well-selected individuals of some one of the several standard varieties will give better results than can be secured by crossbreeding, which has a tendency to bring to the surface the weak points of both sides of the cross. Proper crosses may improve the first issue; if followed up they rarely prove successful.

*Nnmber of females to one male.*—The best rule for mating is to have four or five females to one male; some say twelve, and the writer has heard of a fine hatch and vigorous poults from a two-year-old tom with twenty hens; but this is unusual. When they are yarded and from eight to ten females are kept, it is better to have two toms and keep one shut up while the other is with the hens, changing them at least twice a week. When they run at large on a farm they will naturally divide into flocks; under such conditions one male to not more than six females is best.

### CARE OF BREEDING STOCK.

*Range for turkeys.*—Turkeys may be yarded successfully when desirable The larger the area available, however, the better the development. Young, growing turkeys, to do well, must have a range. It is not advantageous to keep turkeys on a small, confined place. Some have done well with them on eight to twenty acres. Only a few can be grown in this way, and it shows the results of excellent care and consideration when success is attained in such limited quarters.

A wide range of territory for them to go over undisturbed is of vital importance; here they will select the kind of food most to their liking. In the early spring and summer season such a range furnishes plenty of food and exercise for the breeding stock, and later the finest feeding grounds for the growing poults.

*Best condition for breeding stock.*—In caring for the breeding stock avoid having them too fat. When they can go about the barns and granaries they may become overfat. Boiled oats should be fed to them when they have a tendency to become so; wheat and some corn may also be fed to advantage. They should not be allowed to become too fat during the winter months, nor should they be allowed to go hungry or underfed. Where they have the run of the farm there is but little danger of their lacking food, if any stock whatever is fed on the place. They are untiring foragers, and at times greatly reduce their condition by hunting unsuccessfully for food. Wheat, oats, barley, and corn should be scattered about on the ground where they may pick the grains up a kernel at a time. They must have plenty of fresh water, also grit and shell-forming material of some kind. They will travel quite a distance to visit a spring or stream of water, and eagerly devour bugs and beetles during the summer months.

*One cause of inbreeding.*—In mating it is quite unusual for the male to pair with the female more than once for a clutch of eggs, and hens will wander miles if necessary for this opportunity. Through this very natural cause has come the danger of destructive inbreeding in localities where growers who keep but few turkeys depend upon the one male in the neighborhood, who too often pairs with his own descendants, thus causing a lack of vitality in the young poults.

*Roosting places.*—Turkeys do better when they can roost in the open. If well fed, they will thrive more in the shelter of the trees than in a close, confined house. The trouble that arises from allowing them to live in the trees are that they become wild and frequently are stolen. If housed, their quarters should be airy, roomy, and perfectly clean. It is not wise to have them roost with other poultry. If found necessary to confine them, all that is needed is a shed or house that will protect them from the elements and marauders of all kinds, and at the same time not be too confining for them. Place the roosts well up from the floor, and keep the interior perfectly clean and free from vermin.

In localities where it is not too cold during the winter months, it is better to allow the breeding stock to roost out in the open, either in the trees, or upon roosts prepared for them by planting posts that project about eight feet above the ground. Upon these place long poles about two or two and one-half inches in diameter for roosts. Roosting places of this kind are better sheltered when located on the south side of a barn or building. The writer has seen a flock of turkeys which go the year round to such a roost; they belong to one of the most successful turkey growers of Rhode Island, and they live continually in the open, not having even the shelter of the trees.

*Buildings.*—In colder climates, where shelter must be provided, a house may be built that is fashioned after many of our poultry houses with the slanting roof; an open ventilator should be placed in front, close to the roof, and never be closed except in cold weather. The roosts should be placed on a level in the front of the house, with a sliding or rolling door in the rear. Only light enough is needed for the turkeys to see the way to and from the roosts. The door should be left open all day that they may come and go at pleasure. Within this house they may be fed in cold, snowy weather.

In the cold northern climate of Canada one of the most successful turkey growers has a double-inclosed apartment house for his breeding stock in winter, connected with which is an inclosed run that will protect them from the elements, at the same time furnishing opportunity for open-air exercise during the day. This kind of house is most useful in cold climates, but it might be used in all localities and prevent midnight marauders of all kinds from carrying away the turkeys.

## EGG LAYING, INCUBATION, AND HATCHING.

*Egg laying.*—The hen turkey will begin laying from the middle of March to the first of April. In the warmer localities they begin to lay even earlier than this.

*Pairing.*—A feature of vital importance is assured fertility of the eggs. As soon as the hen turkey has pared with the male she pays but little attention to him for the time, being fully intent on locating a nesting place where she can lay her eggs. If perchance the pairing with the male has not been complete, her whole clutch of eggs will be infertile and her time and labor a total loss. The importance of vigor in the male is manifest at this most critical time. There is danger in having extra males that may disturb each other at the time or pairing. Therefore, never allow but one male turkey at a time to run with a group of breeding hens.

*Gathering the eggs.*—Much depends upon locality and climatic conditions. It often occurs that the hen turkey will begin to lay at a time when changeable weather may endanger the vitality of her eggs. She should be closely watched in her wanderings, so as to locate her nest and gather the eggs in order to protect them from the cold nights that may come at this early season of the year. It is better, when the necessity arises of taking all or part of the eggs from her nest, to leave eggs of some other kind in their place; large-sized nest eggs of china are the best. If all the eggs are removed she may become dissatisfied and wander away to locate her nest elsewhere, which may prove a disadvantage in securing the best results.

*Hiding Nests.*—If unrestrained the hen will naturally select some secluded place, under a pile of lumber or logs, or in the brush, for example, where she can hide her nest, hatch, and bring out her young after her natural inclination. If she selects a place which is not well protected, it is better to provide a box or coop with a suitable opening for ingress and egress to protect her and her eggs from the weather during the four weeks of incubation. In addition to this, the slat or lath frame may be placed over her a short time prior to the hatching of the eggs, so as to prevent the hen from wadering away with the young poults as soon as hatched. Those who favor the "perfect liberty" plan may secure larger flocks by following the above suggestions. Good care should also be given to the feeding of these semiwild flocks while young and in unusually wet weather.

*Prepared Nests.*—Those who care for turkey hens with a view to quieting and domesticating them may readily induce them to select for nesting places empty barrels that have been turned on their sides for this purpose. Make the nests within of soft straw or hay, and the turkey hens will adopt these for their laying places if induced to come near them to feed. When they can not be made to select nests so provided, it may be necessary to confine them in a fair-sized inclosure until they are content to lay where it is more desirable. When the grower wishes to save all the eggs laid, provision must be made against the hiding of nests by shutting the hens into such inclosures. In this way they may be taught to lay in these nests, where they will sit when broody. From these inclosures they may be given freedom to roam about after three or four o'clock each day, or after they have laid. When roosting time comes, either coax or drive them back if they do not go voluntarily. By so doing one may have eggs to sell or set at will. Turkey hens will lay from fifteen to twenty eggs before becoming broody, and it is not unusual to break them up from sitting the first time have them lay again, and permit them to sit on their second clutch of eggs. When this is done the hen turkey should be fed plenty of grain, grit, and shell-forming material.

## HATCHING.

*Hatching by hens.*—Turkey hens produce such a limited number of eggs that it is scarcely necessary to bring into use the incubator for their hatching, as the hens themselves can hatch all they lay, or nearly all. Moreover the fact that the turkey hens are almost indispensable to the successful rearing of the poults makes it an absolute necessity that they should hatch some of their eggs, so as to induce them to brood the poults. Quite frequently some turkey eggs for hatching are given to chicken hens of large size, and the poults they bring from the eggs are given to a turkey hen to rear. Chicken hens brood the poults quite as well as the turkey hens up to a certain age, at which time the poults begin to wander. If other broods of poults are with turkey hens, those with the chicken hen will usually leave their foster mother, wander away with a flock of turkeys, and stay with them.

*Age of hens.*—When their is an opportunity for choice, hens that are two years old or over are the best to select for hatching the eggs. The continual strain of four weeks sitting demanded for hatching turkey eggs is quite a trial of patience and endurance, and while many young hens do their part to perfection, it is safer to trust the task to older hens if you have them. Eggs from hens that are two years old and over produce stronger and more vigorous poults than do eggs from yearling hens.

*Danger from insect parasites.*—Whether the eggs are hatched by turkey hens or chicken hens, equal caution should be used to prevent the possibility or insect parasites of any kind being in or about the nest or upon the body of the hen. A dirt foundation covered with some slaked lime is a good beginning in the construction of a nest. Upon this should be placed a fresh nest of soft straw or hay. No other enemy is so destructive to young poults as lice, which are very apt to infest them as soon as they are hatched, if a determined fight is not made to prevent it. After the poults have begun to grow, they must be watched continually to guard against the presence of lice.

*Period of incubation.*—It takes twenty-seven to twenty-nine days for turkey eggs to hatch. Those that are perfectly fresh will hatch a few hours sooner than those that have been kept a week or longer before placing them under the hens.

*Number of eggs for a sitting.*—The eggs are usually fertile; quite frequently each egg in the nest will produce a living poult. Place under each hen just as many eggs as she may properly cover—no more. Some may cover fifteen better than others will cover nine. If the hen is given too many eggs a poor hatch is likely to result.

*Two broods in a season.*—When broody turkey hens are driven from their nests, they are quite likely to quit their eggs and select another location where they will nest and lay the second clutch of eggs. Some turkey hens will rear two broods in a season when permitted so to do. Late-hatched poults are not desirable for winter roasts, nor are they valuable for breeding stock, but they may be grown for broiler poults and sold to good advantage.

*Feeding and setting hen.*—While incubating their eggs the hens should be supplied with food and water; these should be placed close at hand where they may go to them at will; or their coming from the nest, as they will each day, should be observed so that they may be fed and watered. Good sound wheat and corn are best for their food at this time.

### GROWING THE POULTS.

The most difficult part of turkey raising is to know how to care for the poults—to know what to do and when to do it. All that one can learn from others or from reading will not be of equal value to one year's actual experience in caring for them.

### METHODS OF HANDLING.

There are almost as many ways and methods of feeding as there are localities where turkeys are grown. A considerable number who allow their turkeys a good deal of freedom will succeed; others do equally well who follow methods quite the reverse. Some never house the mother hen or the young, while others house them both.

*Semiwild nature of turkeys.*—While our present day turkeys are classed as ''domestic fowls'', they are rather semidomestic when compared with other poultry. For this reason the treatment given them must differ from that given to hens and chickens, and houses or coops that will serve for the latter will not meet the wants of the turkey hen. She must have a house or box in which she can stand erect and stretch her neck and look about. The floor of this must be clean and dry for the poults; it may be of boards, but dry, clean earth is best for both the hen and the poults. This natural environment has a beneficial influence upon the mother and the young turkeys. It adds to both health and spirits, and helps to develop constitutional vigor.

*Danger of overdoing.*—Satisfactory results can never be secured by handling turkeys like cage birds or hothouse plants. Avoid overdoing the care and attention. Treat them like turkeys, and use common sense in looking after them. Their native home was in the woods and fields; in their present semidomestic condition they need more shelter and care, but they should never be shut in so close as to deprive them of plenty of light, room and air. They should not be pampered and fed upon unnatural foods; neither should they be overfed at any time. In their wild state they ran about here and there, seeking small grains, seeds, and bugs, getting plenty of exercise as well as food. Their domestic condition deprives them of the necessity of hunting for their food, and consequently of the exercise that comes from so doing.

*Danger of neglect.*—When quite young, the poults are apt to receive more attention than they need. Then, as they grow older and the novelty of attending to them wears off, they are too often neglected just at the time when more care should be given to them. For instance, when their feathers are growing and the unusual heat overcomes them, special care may profitably be bestowed; again, the same is true when the frost destroys their natural food supply in the fall. Thousands are lost at these critical periods from lack of a full food supply.

### COOPS FOR MOTHER AND YOUNG.

*Kind of coops to use.*—An open coop, made of slats or laths, may be placed over the mother turkey just prior to the hatching of her eggs, as this will prevent her wandering away with her young when they are hatched. it may be covered on top with tar paper for protection from rain or sun. Such open coops are frequently used in turkey-growing districts, and those who use them could not be induced to change. They should be large enough to provide plenty of space for the mother turkey. Quite often a box too small for the hen to turn about or to stand erect in is used for a coup for the hen and poults. This annoys her and she becomes restless, tramps about, kills her young, and is blamed for taking bad or indifferent care of her offspring, when more than likely if she had room to move about she would be a model mother for her poults.

In a suitable coop, the brood of young turkeys can stay for a day or more in comfort, sheltered from wet and storm or cold, with space enough to move about. In such a coop the very young poults can stay while the mother goes about on the outside for exercise. To have this use of the coop when the hen is out, set up in slides inside the door a piece of board a foot wide; this will keep the poults safe from the hot sun or the wet much better than will the triangular pen so often made of three boards.

Almost any kind of pen, coop, or house will do for the turkey hen and poults if it will protect them from rain and storms, if it is large enough, is clean, not too close or warm, and absolutely free from parasitic enemies.

these are the important requisites of the structure in which they are to be kept until the poults are well started. They should be allowed their freedom a part of every day when the grass is dry, and should be made to stay within at nights and during wet days, till old enough to wander with the mother hen and roost out on the fences or trees.

*Treatment of old coops.*—Either fresh coops should be provided each year or the old ones should be thoroughly cleansed within and without. Prior to using old coops, paint them thoroughly with crude patroleum in which have been dissolved some naphthalene balls, filling every crack and crevice with this at least a week before they are needed, and be sure that the odor of the preparation has disappeared before using the coops, as it is not beneficial to the young. The features of most importance in cooping the mother and young are plenty of light and room, and freedom from dampness and insect parasites.

### REMOVAL FROM THE NEST.

When the poults are ready to leave the nest, move the mother hen and her young into the coop provided for them; supply a little food now and then as they need it, and see that the mother has plenty of food and water. Let them alone in the coop till they begin to move about. As soon as they will, let the poults run out on the grass when it is dry, but keep them from the wet grass, as nothing is more detrimental to their growth, unless it be insect parasites. As they advance give them a more plentiful food supply, and guard against any possibility of lice infesting them.

*Protection from sun's rays.*—While they are young special attention must be given to the protection from the direct rays of the sun, exposure to which wilts them completely. At times they will reel under its influence as though suffering from sunstroke, or move about with slow steps, weakly dragging one foot after the other, while giving forth a feeble peep that sounds the warning of their approaching end. The blood-sucking parasite has much the same effect upon them when present. When under the influence of both at the same time the chance of survival is small indeed.

*Protection from dampness.*—Have a dry spot where the young poults may run and exercise. This may be provided by spreading a load or two of course sand near the coops, which will furnish a dry foothold no matter how wet or damp the grass may be. To keep this in sanitary condition go over it once a day with a fine-toothed rake, in order that the sun may dry it thoroughly. When the young turkeys are suitably housed, properly fed, and kept free from lice, they are quite as easy to grow as young chickens.

### FEEDING THE NEWLY HATCHED POULTS.

*Variety of Methods.*—A thorough investigation of the methods of feeding young turkeys shows to what extent general rules already cited are followed. While all who succeds seems to adopt nearly the same methods, there are a few differences worthy of consideration. Some feed bread and milk in a saucer as soon as the poults will eat, while others soak bread and milk and squeese it dry before feeding; some adhere closely to an absolute grain diet, while othets feed everything they imagine the poults will eat.

*Copying nature.*—It should never be forgotten that in the wild state their food was the bugs, worms, seeds, etc., which they could find for themselves, and which were hunted for and scrambled after continually. There was then no overfeeding upon rich unatural foods that impaired health and produced bowel troubles or other ailments that naturally follow unwholesome food. They subsisted by their own efforts in the wild state, while now they are quite too often forced to eat unatural foods that are furnished in hope of forcing them to an unatural growth. If the grower wishes to copy nature as nearly as possible, the young poults may be given for their first meal very fine oatmeal or finely cracked wheat or corn, with a little fine grit of some kind and a very little granulated meat scrap. Some of the commercial brands of "poultry food" are also good. They should have clean water convenient where they can help themselves at will.

*Use bread and milk.*—As a general rule do not feed them wet food or slops. Poults are seed-eating chicks, not slop eaters. Bread and milk, however, contains elements most valuable in the growing of all kinds of fowls. This food should be considered, when properly given, as one of the best kinds of food for the first day or two. Soak stale bread in sweet milk, press out the milk as completly as possible, and feed the bread to the young poults. Be careful never to use sour milk, nor should the bread thus prepared ever be fed after it has become sour. Feed this, a little at a time, every hour or two for two days or more; then add a little hard-boiled egg, shell and all broken fine, to the soaked bread.

*Meat in the ration.*—After a day or two on this ration, follow with the ration of finely broken grain already described, and include a little finely cut meat. Make sure that the meat scrap is pure and sweet. Nothing is more injurious to the poults than tainted or infected meat of any kind, as it will disturb their bowels in a very few hours and cause great trouble. Lean beef, well cooked and cut into very small fragments, is good. Be very cautious about feeding green meat or bone. If any of this is fed, have it cut quite fine, giving but little at first, and be absolutely certain that it is fresh and sweet. Cooked meat is better for them while young.

*Supply of grit.*—Coarse sand is excellent for grit, and if sufficient of this is at hand no other grit will be needed; but plenty of grit of some kind is a necessity, for without it the poults can not grind their food.

*Danger of overfeeding.*—Food should be given them quite early in the morning and at frequent intervals during the day. Never overfeed them, but use discretion in providing plentifully for their necessities. Give them all they will eat willingly and no more. Avoid the use of rich foods, grains in hulls, and millet seed, which is not good for them while they are young; a little of this seed, however, may be fed as they grow older. Too much hard-boiled egg is bad for them, while a reasonable amount with bread is beneficial. An excess has a tendency to clog and congest the bowels, and the writer has seen poults die from the effects of a diet exclusively of egg and millet seed. The same injurous effect may be produced by feeding entirely with milk curds.

*Bowel trouble.*—Bowel trouble must be considered as an assured result of improper feeding, and may be aggravated by exposure to cold and dampness. Indigestion is a prime factor in the development of this ailment that kills so many turkeys while young. This should be prevented so far as possible by the feeding of finely broken charcoal, which is a safeguard against fermentation in the crop or gizzard, thus aiding digestion. This looseness of the bowels should not be mistaken for cholera. It may usually be relieved by feeding rice that has been boiled almost dry in milk.

*Hand feeding.*—Too much strees can not be laid upon the practice of hand feeding. The turkey hens are not so attentive to their young as chicken hens. If all who grow turkeys would pay special attention to hand feeding of the poults as soon as they are hatched, much benefit might be gained. To be successful with hand feeding, one must take the food between the fingers and thumb, patiently hold it to the beak of the young turkey, and try to induce it to eat. This method of feeding tames and quiets the young poults, gives them a good start, and prevents the possible contamination of the food by being thrown upon the ground. Although feeding in this manner may appear to involve considerable labor, the resulting benefits are often far in excess of the time and effort expended.

### FEEDING THE POULTS AS THEY GROW OLDER.

*Food and treatment.*—After three weeks the poults may have whole wheat, hulled oats, cracked corn and a little millet seed, in addition to their other food. Many young turkeys are lost when partly grown, particularly in wet weather after they have been given liberty to roam at will. Much loss may be avoided by going after them wherever they may be and feeding them once or twice a day. This plan should be followed during continued wet weather, no matter how far advanced they may be. A continuous wet spell deprives them of the greater part of the bugs and worms they feed upon, and the wet grass, by retarding their motion, tends to reduce vitality. Go after them during such weather and feed them, so as to prevent the bad results that must follow a scarcity of food at such times. Flocks of young turkeys that wander continually should be fed at least once a day, if only a little, to keep them quiet or tame. If fed at least once a day on grain, they will grow faster, mature earlier, and make better size than if not fed at all. Those who make use of these methods secure the best results.

*A practical example.*—One of the most successful growers in the country feeds the young poults at the start oatmeal, broken wheat and finely cracked corn, as they grow older whole wheat, hulled oats and coarser cracked corn, and still later, whole grains of corn. When running at large they are taught to come close to the barns twice a day for food. Following these and similar methods enabled him to bring to maturity, during the unfavorable season of 1903, over three hundred white turkeys out of about three hundred and thirty-five that were hatched.

*Feeding oats.*—Hulled oats are used to avoid the injurious effects that arise from feeding oats in the hull, the sharp portions of which are apt to prick and irritate the crop. No more nutritious grain can be feed to growing poults than hulled oats. Wheat and whole or broken corn will do as they grow older, but oats should be added whenever practicable. If hulled oats can not be had, use clipped oats, boiled; drain them thoroughly, and feed when cold. Always select plump, heavy oats, with a large percentage of kernel.

*Avoid unsound grain.*—Nothing equals good sound grain of all kinds for feeding the growing turkeys. Do not use poor, shriveled, or musty grain of any kind. It is a mistaken notion that it will pay to feed inferior grain to any kind of growing fowl. It is a loss of both time and money to do so, as nothing but disappointment can result from its use. The best results always come from having the best quality of stock and giving it the best food and care.

### FEEDING FOR THE MARKET—EARLY FALL FEEDING.

*The best ration.*—As soon as the weather begins to turn cold and insect food becomes scarce, an increased grain diet must be provided for the growing turkeys. A ration of wheat and corn is the best. Do not feed them too much at first, but gradually increase the supply until they are having all they will eat.

*Plenty of food with no confinement.*—Those who succeed best in having the turkeys ready and in fine condition for the early market are those who allow them their freedom and feed them all they will eat of wholesome fattening grain. Even when finishing them, it is not well to confine them. If they are fed each day at regular hours and at the same place, it will be an easy matter to have them come three times a day to this place to be fed. Their longing for food being fully supplied, less violent exercise will be taken, and the energy that would be expended in their wanderings in search of food will be directed in the more profitable channel of growing and doveloping for market. Turkeys that are poorly fed during the fall expend in seeking food that is no longer attainable, considerable of the flesh they may have gained.

*Turkeys compared with hogs and cattle.*—When feeding turkeys for market it must be remembered that they will sell for considerably more per pound than can be obtained for hogs or cattle, while the actual food cost per pound of turkey meat is but little if any more than for hogs or cattle. It will always pay well to give to growing turkeys all the grain they can eat.

### HEAVY FEEDING.

*Advantage of the early market.*—Keep them growing from start to finish, and have them ready for the Thanksgiving market, when prices are usually the best. This may be accomplished quite easily with all the early broods, provided they are properly and liberally fed, as the fall weather begins to remove their natural food supply of worms, bugs, seeds, and herbs of all kinds. In feeding for market, the end most desired is complete growth and the greatest possible weight by Thanksgiving time. The records of years show the highest value for market turkeys to have been reached during the last week of November. While the demand is not quite so brisk at Christmas time, the prices are almost as high.

*What and when to feed.*—Old corn is better than new for heavy feeding, as the latter is apt to cause looseness of the bowels. If necessary to use new corn, it should be introduced into the ration gradually. If the poults have gained a strong, well-developed physique by early fall, they will be in fine condition for heavy feeding. As soon as they have become accustomed to grain feeding, they may be fed once or even twice a day on ground oats and cornmeal mixed with milk. This should be given in addition to an abundance of wheat and corn. They should be fed each time just what they will eat up clean with a relish. Feed the grain mornings and evenings, and the mixture at noon or twice between morning and evening, as best suits your convenience. See that plenty of sharp grit is always at hand for their use and provide a constant supply of fresh water where they may help themselves.

### FEEDING STOCK TURKEYS.

*Separation from market stock.*—Few growers separate their stock or breeding turkeys from those intended for market. Entirely too many growers feed them all together, sell the most thrifty for market, and keep the least matured for producing stock. This is a great mistake; the very best should be selected for producing stock, and the rest fed for market. Those selected for use in breeding, however, should be separated and fed by themselves if possible. The best food for stock turkeys is boiled oats drained of all moisture, some wheat, and a little corn. This will keep them in a good, healthy condition and quite full enough of flesh. It is a mistake to keep as producers fowls poor or thin in flesh. They must be in good condition, plump, but not overfat.

*Prime condition and how to secure it.*—For the best results in egg laying, hens should neither be too fat nor too lean. The yolk of the egg is normally one-third fat, about one-sixth protein, and the remainder water. The hen must have enough substance to her body to insure the production of the eggs. An excess of fat in the body arises from too much fattening food during the season of no egg production. Hens actively engaged in egg producing seldom become overfat. If kept in prime condition out of laying season, they may be fed on boiled oats, wheat, and some corn, when the laying season is at hand. The main point in feeding stock turkeys out of laying season is to feed them enough fully to sustain their physical condition and health, so as to have them in proper condition for egg production when the time arrives. Then a suitable ration for egg production may be adopted.

### MARKETING.

After the turkeys are grown and ready for market, quite as much care and attention should be given to the killing and shipping as to the proper growing. Where these things can not be done to good advantage, it is better to sell them alive. Buyers who are prepared to kill, dress, pack, and ship turkeys, and to save the feathers, should be in position to pay what they are worth alive; and should be able to handle them at a profit, better than can the grower, who may not be prepared to do the work to advantage. So much depends upon marketing them in the best condition that small growers should either dress and sell to their home market or, providing it can be done at a fair price, sell alive to someone who makes a business of handling such stock.

## KILLING.

Kill nothing but well fattened stock. It seldom pays to send ill-favored stock into market. Do not give any food to the turkeys for twenty-four hours prior to killing. This allows the crop and entrails to become empty and avoids much of the danger of spoiling. Full crops and entrails count against value; they often taint the meat and prevent its being kept for any length of time.

*Methods of killing.*—There are two methods of killing largely used. The most popular is to suspend the fowl by the shanks, head down, and cut or stick it in the roof of the mouth with a knife made especially for this purpose. This severs the arteries and cuts into the brain, causing insensibility and a free flow of blood from the mouth. This is called sticking in the roof of the mouth.

The other plan is to break the neck by a quick twist or jerk backward. When the neck is completely disjointed the head is pulled away so as to form an open space in the neck in which the blood may settle. This plan has been but little used, though the claim is made that when so killed the fowls will keep longer, because there is no opening by which the air can get into the body, as there is when they are stuck in the roof of the mouth. This method has been more used for chickens than for turkeys, and to use it well requires considerable practice.

The method of beheading with an ax or hatchet has been employed for ages.

## DRESSING.

*Dry picking.*—Dry picking is always to be preferred when preparing the fowls for market. When in fine condition, nicely picked, and sent to the market without having been packed in ice, a turkey is at its best; and consequently commands the highest price. As soon as the fowl is stuck and the blood is still flowing, pluck the feathers dry from its body, taking care in doing this not to break the skin or tear the flesh. Nothing detracts so much from dressed poultry as torn places upon the carcass or shank; picking must be clean and nicely done. When the fowl is plucked hang it head down in a cool place until all animal heat is gone from the body, being careful not to hang it where it will be so exposed to cold air as to be likely to freeze. Do not remove the head, feet or entrails, but have the whole carcass, including head and feet, perfectly clean.

*Scalding and picking.*—The method known as scalding and plucking is too familiar to need comment further than to say that care must be taken not to scald or tear the skin or shank. Perform this operation as neatly as possible. As soon as the animal heat has left the body, the appearance of the dressed turkeys may be improved by submerging for a short time in cold water, as this has a tendency to make them plump whether dry picked or scalded. The plucking should be done as quickly as possible; the more quickly done, the more readily can the feathers be removed.

### PACKING.

For shipping pack as closely as possible into close boxes or barrels, nicely lined with white or manila paper; do not use brown, soiled or printed paper. Have the package completely filled so as to prevent the poultry from shifting about in transit; do not use hay or straw for packing, as it marks or stains the fowls and detracts from their value. The above method can only be used when the poultry is sent to market without being packed in ice, and when this can be done with safety, either in refrigerator cars or for a short distance in cold weather, it is by far the best. The greater part, however, must be packed in ice. When necessary to do this, use nice, clean barrels. Cover the bottom with broken ice; then put in a layer of poultry, then a layer of ice; continue thus until the barrel is packed solid and full. Always use perfectly clean ice for packing. Head the barrel tightly and mark its contents plainly on the head, and never ship mixed lots of poultry in the same package if it can be avoided.

### PARASITES AND DISEASES.

No kind of young poultry is so susceptible to the effects of unfavorable conditions as young turkeys. They must be carefully protected from attacks of parasites and from excessive heat and dampness until they have gained sufficient strength and size to wander away with the parent turkeys and care for themselves upon the range.

### INSECT PARASITES.

The chief danger from lice and mite attacks to the poults is directly after the poults are hatched; but the best remedy is to deal with the hen before the young are hatched. The plumage of the hen should be dusted with insect powder close down to the skin from head to hock joint, being careful not to get it into the eyes. This should be done at least twice a week until within two or three days before hatching. The most careful attention should be given to this. Never use lime or sulphur for this purpose. Nothing is better than Persian insect powder, but any good insect powder will answer the purpose if it does not contain ingredients that are injurious to the eyes.

It may often occur, however, that the hen will not have been properly treated, and so lice and mites will be found on the young; and in order that the poults may live and thrive, they must be freed of these enemies. As soon as the young are ready to leave the nest they must be examined carefully for lice, which may be on top of the head, under the throat, or about the wings or vent. Some of them are gray in color and difficult to see. They may be destroyed by the use of sweet oil, rubbing a very small amount upon the head and throat; insect powder is sufficient for the other parts of the body. It is very important that only a small amount of the sweet oil be used, as too much is injurious. Kerosene should never be used to destroy parasites.

### GAPES.

After external parasites, the most destructive ailment of young turkeys is gapes.

*Cause of the trouble.*—This comes from certain small worms that are picked up by the young turkeys in places that have become infested with them. Some believe that the angleworm is the cause of the spreading of gapes, and it probably is one of the causes. It is possible for the angleworm or other worms to be infested with gapeworms, and thus, when eaten, to cause the gapes in young chickens and turkeys. Whenever the ground is infested with the gapeworm eggs they may readily infest all the angleworms in the same soil, and the eating of these may cause the infestation of the young poults.

*Treatment.*—Many remedies are recommended for this ailment, few of which have ever proven of much advantage. A feather or a twisted horse hair may be introduced into the windpipe for the removal of the gapeworms. Some recommend the feeding of finely chopped garlic and of turpentine in the mash, while others suggest the mixing of a teaspoonful of naphtha or benzene in enough mixed food for a dozen poults. The theory of the use of these remedies is that the fumes from the turpentine or the benzine will pass through the entire body and into the windpipe and destroy the gapeworm.

These remedies are known to have destroyed as well as to have cured, and great percaution must be observed in their administration; try them on a few at a time and do not risk the destruction of the whole flock. Another remedy is to place the ailing chicks in a box over which has been stretched some cheese cloth; take some very dry air-slacked lime and sift it down onto the poults or chicks through the cheese cloth; this fine dust will penetrate the nostrils and throat and cause a violent coughing and sneezing, which tends to dislodge the gapeworms and give relief. It is, however, a dangerous remedy which should be cautiously used rather as an experiment than as an absolute cure.

*Prevention.*—No saying could be more truly applied to this ailment than "a pound of prevention is worth a ton of cure," and cleanliness is the only sure preventive of gapes. Where the ground has become infested, a very thin coating of slacked lime should be scattered all over it early in the spring before the frost is out of the ground and allowed to lie there until the frost disappears, leaving the ground almost dry; then take a hoe and scrape off all the lime and one-half inch of the soil, cart it away, and bury it at least four feet under ground.

Another plan is to sprinkle the soil with water into which has been mixed some sulphuric acid; after twenty-four hours cover the surface with lime and turn the soil under with a plow. A surer and better way than this is to remove your poultry plant to an entirely new part of the farm where there is no danger of infestation, then spread a coating of lime over the infected land and plow it under and cultivate it for a year or two.

Examinations made by opening the windpipes of dressed turkeys during the winter have frequently revealed the presence of two, three or four gapeworms attached to the lining membrane of the windpipe; thus is shown the possibility of carrying the infection over in grown birds, which must likewise be provided against. The grown turkey might be carefully subjected to the lime-dust treatment as above, to produce coughing or sneezing; and some of the mucus may be taken from the throat with a fine platinum loop and examined under the microscope for worm eggs. Those showing evidence of the presence of the worms should be kept isolated and treated until they are known to be free of the worms.

### BLACKHEAD.

In many localities turkey growing has become almost extinct as the result of the scourge known as blackhead. This disease was first noticed in New England but quickly spread throughout the entire country.

*Nature of the disease.*—It first attacks the cecum—the blind gut situated between the large and small intestines. It also attacks the liver, this organ becoming very much enlarged, often to twice its normal size, and showing over its surface discolored spots varying from one-eighth to two-thirds of an inch in diameter, shading in color from whitish lemon to dark yellow.

While this disease is attributed to microbes, it is thought to be very much aggravated or increased through inbreeding. In other words, many attribute the prevalence of what is known as blackhead to the depleted vitality of the stock of breeding turkeys making it possible for the germs to grow and gain destructive foothold.

*Symptoms.*—Diarrhea is the most marked and consant symptom, and may be expected sooner or later in the course of the disease; it results from inflammation and internal weakness. A peculiar discoloration of the head occurs when the disease is at its height, which has led to the popular designation of blackhead. This disease attacks very young turkeys and often lasts for several months before causing death. The fact that the propagation of this affection is more active during midsummer has led to the belief that it is exclusively a summer disease.

*Treatment.*—The use of medicine has not proven very successful. Among the remedies most recommended are sulphur, sulphate of iron, quinine and salicylic acid. Sulphur may be given, 5 to 10 grains being combined with 1 grain of sulphate of iron; or sulphur, 10 grains, sulphate of iron, 1 grain, and sulphate of quinine, 1 grain. It is necessary that such treatment be repeated two or three times a day and continued for considerable time to obtain results. Some people who have had experience with this ailment in recent years believe that it results largely from inbreeding, the infection being transmitted from one flock to another by affected birds or eggs. The remedies applied proving of little benefit, the only alternative is the introduction of new, strong, and healthy stock. Some have gone so far as to destroy their entire flocks, and, after having thoroughly disinfected the premises, started with new, healthy stock, while others have introduced wild blood into their flocks.

In all bowel troubles in turkeys, feeding boiled rice has proven of benefit, and it has been largely practiced by experienced growers. Many feed the boiled rice to the young poults to prevent the coming of the destructive diarrhea. The most successful way to obviate a dangerous looseness of the bowels is to avoid feeding wet or sloppy food and guard the young from taking cold. The feeding of small particles of charcoal is beneficial to the young from the fact that it sweetens the crop and gizzard and prevents fermentation, which is very injurious and destructive. Above all things, never make use of infected turkeys for breeding stock.

### TAPEWORM.

Tapeworm and worms of all kinds are very injurious to turkeys.

*Symptoms.*—The presence of the tapeworm may be recognized through the indolent, drowsy spirits of those infested with it; a careful examination of the voidings will also reveal its presence, as those infested will pass small portions of the worm.

*Treatment.*—Powdered male fern is an effective remedy, and may be administered in doses of from thirty grains to one dram of the powder; or of the liquid extract, fifteen to thirty drops. This should be administered morning and evening before feeding, the minimum dose to the younger, increasing the dose as they grow older. Oil of turpentine is an excellent remedy against worms of all kinds which inhabit the digestive organs of poultry. A common remedy made use of by some for the removal of worms from fowls is one drop of kerosene oil night and morning. This should not be administered to the very young, but may be used with impunity after they are a few weeks old.

### DIARRHEA.

Looseness of the bowels or diarrhea is quite too often mistaken for cholera; but such looseness may come from any of several causes, such as bad feeding, dampness, filth, or infestation with lice. The removal of the cause is the very best cure. Feeding boiled rice and a little charcoal, as already stated, will prove of great benefit. The remedy most often used is a mixture of equal parts of ground ginger, cinnamon, cloves, and cayenne pepper. This is mixed into the mash food, about a stroked teaspoonful to a dozen young poults. Double the amount after they are four or five weeks old. What is known as Sun cholera mixture is very beneficial, either when mixed in the drinking water or the mash food. This may be given so that each would have from five to twenty drops at a time according to age.

### CHOLERA.

Cholera, when present in its true form, is a most uncompromising disease. The only thing that can be done to save a flock of turkeys attacked with true cholera is to remove all the ailing ones immediately and destroy them. Transfer those not attacked to some other part of the farm and thoroughly disinfect and clean up the locality where they have been, feeding nothing but a slight grain diet for a short time. Medical treatment has been of very little service in this ailment. The drugs that have been used are sulphur, copperas, capsicum, alcohol, and resin, either administered separately, or equal parts thoroughly mixed together and administered in the mash food.

Diarrhea and blackhead are often mistaken for cholera. If it is always remembered that the carcass, no matter from what cause the fowl may have died, should be either burned up or buried at least four feet underground, no infection to other fowls is likely to result. No other known cause of the spreading of the disease equals the permitting of dead bodies of infected fowls to lie about.

Turkeys, like poultry of all other kinds, are subject to the other diseases and ailments which affect fowls, most of which may be prevented or avoided if proper care and attention are given to the sanitary conditions and to the proper feeding of the stock.

# AGRICULTURE.

## THE STUDY OF AGRICULTURE IN THE PUBLIC SCHOOLS.

*Z. C. Thornburg, Superintendent Polk County Public Schools.*

During the last few years there has been much discussion in teachers' conventions and farmers' institutes regarding the study of agriculture in the common schools, and the almost universal conclusion has been that to some extent at least, this subject should be added to our school curriculum.

Some have raised the objection that the course of study is already too crowded and for this reason it would be unwise to add another subject. This may or may not be true. However, the leading educators of our country are agreed in that the public schools should teach more of things and conditions and not so much of text-books alone.

The schools for years have had nature study in a sort of mechanical way, but no one can be found who will acknowledge that this nature study work has brought forth the desired results. The trouble has been that the work was not practicable. Books were studied and not nature itself. In no line of school work has there been so much waste and nonsense as is found in this so-called "Nature Study." If, however, the teachers of our schools would pursue nature study along the lines of elementary agriculture, I believe very much could be accomplished.

First of all, the teachers must know something about this subject. They must carry on some investigation for themselves. They must also be able to direct their pupils in original investigation along this line. The large majority of our teachers in the rural schools come from the cities and towns. They are woefully ignorant and uninformed regarding rural conditions and terms. They are "greener" to the rural people than the country boy or girl is when he or she goes to the city. A sensible course of study or outline for nature study based upon what is generally understood by elementary agriculture, will be of great assistance to these teachers in their schools, and will also lead the pupils to the original study and investigation of conditions with which they are continually coming in contact. This work is particularly needed in the towns and village schools, but we will not be able to get the teachers to do this work until it is made one of the required subjects in the teachers' examinations.

Along this line Iowa is not abreast with the other States in the great agricultural section. Practically all of the States in the Northern Mississippi Valley are requiring the teachers to pass an examination in this subject and also to give instruction in the same in the schools. Iowa, as an agricultural State, stands at the head of all of these other States and it is unfortunate, indeed, that she has permitted herself to take a secondary position in this particular subject.

Many of the county and city superintendents have outlined and conducted some work along this line, always with good results, and much more could be accomplished if the superintendents would emphasize the work more than they do. One county superintendent recently sent out to all the teachers of the rural schools of his county an outline for winter agricultural study with the request that samples of the work prepared be returned to his office. Much interest has been created and good work accomplished. Other superintendents have organized agricultural clubs for the boys and girls of the county.

The following and similar suggestions could be taken up and pursued in in every school in Iowa.

1. Make a map of the school district and lay off the farms.

2. How many acres of wheat (or corn or whatever other product is most argely grown), were raised on each farm this year, and how many bushels did it yield per acre? The same for any other three principal crops.

3. Study the pines and spruces. What is the shape of evergreen leaves? Do evergreen trees ever shed their leaves? The pines bear their leaves in clusters. How many leaves in each cluster? Are there the same number of leaves in the clusters of each pine tree you have examined?

4. Make a collection of several kinds of cones. Open some of them and find where the seeds are hidden.

5. Find some man who is feeding a bunch of steers. Make a record of the following:

a. How many in the bunch?

b. How many are red? How many roan? How many black? How many spotted red and white? How many spotted black and white?

c. How much does the whole bunch eat each day?

d. What ones are fattening best?

e. How many hogs are feeding with them?

6. Plot and write a history of one farm in the neighborhood; what is raised the present year; how many acres of each; what the yield; how much was marketed and how much fed or otherwise consumed on the farm; how many acres failed to yield anything (counting fence rows, waste places, etc.); what the family used and what it is worth at market prices.

7. What does it cost to raise an acre of corn? How much for rent or use of land? How much for labor? How much for seed?

## AGRICULTURE IN OUR RURAL SCHOOLS.

*Frank D. Joseph, Delaware County Schools, Superintendent, Manchester, Iowa.*

I have been asked to write a few words as to the relation of agriculture to our rural schools. In so doing I shall take the liberty of digressing somewhat from the real subject and treat it more in general relationship to our public schools. It is my intention to exploit no wildcat scheme, but shall speak of some things as possibilities. While not in full sympathy with the present movement for agricultural instruction, I believe there is real value in its study. France, Germany and England require it in their course of study. Even in America some states make it compulsory. In Wisconsin no teacher is allowed to graduate from the normal schools without pursuing an elementary course in agriculture. The people of that State are also conducting county schools that give the farm boy a course equal to the short course in most State institutions. A number of states teach the subject in their rural grades, so we can see it is not a new one.

Some one has said, ''There is a crying need for agriculture in our public schools,'' and naturally we wonder from whom comes the cry. Is it some one anxious to exploit his ideas before the people, or some book company, shrewd to see an opportunity of profitable investment, or is it the common sentiment of the people? We are inclined to believe no one man, by his hobby, could influence so many persons, that a book company could not screen its avaricious spirit, but that the public believe agriculture a leaven of good to our rural communities. We must all agree there is an ethical value in the study, whatever our minds may be regarding the method of teaching. The farm is shown to be worthy of study. The things about the farm are dignified as being worthy of scientific investigation. The pupil also learns that he may study the things near at hand and receive the mental power for which he is striving, and in his pursuit he is making his work a pleasure.

Permit me to say, it matters but little what I may think on this subject but it is what the tax-payer wants and is willing to pay for that governs our public schools. In the few words that follow I desire to direct your attention along two lines of discussion. First, Agriculture, its relation to our rural schools. Second, Agriculture, as taught is a county high school. These do not of necessity go hand in hand. Either will live without the other, but perhaps the high school will receive more attention and reach a larger number of students if Agriculture is taught in the district school.

There is a common idea held that the teaching of Agriculture means the expounding of commonalties; expatiating upon the best methods of plowing, dragging, sowing and reaping; or that some man sits in his office and tells how to do these things with which the farm boy is already familiar. Such is not the case. In a simple way the child is lead to observe the things about him,—how the soil takes up the water, drainage, how plants feed, parasites on plants, weeds on crops, dairying, principles of feeding and animals. All these naturally tend to sharpen the intellect, stimulate an interest in nature, likewise teach us to work with our hands as well as the mind.

Again we hear, our rural schools now educate the boy away from the farm. In this statement there is an element of truth. The study of history, civics and biography does carry one from nature's teachings. It presents to the child the full grown man active in the world's affairs. He sees the town or city as the home of his ideal and even pictures himself, at no great future, standing shoulder to shoulder with those that shape our nation's destiny. Is it any wonder, then, that an ambitious boy is fired to seek a city home?

I would not deprive him of these ideals nor quench his fiery spirit, but I say if we would give him a greater love for nature's teachings he would cling to his ideals and in addition find a friend in the birds, the bees, the clod or the flower along his pathway. Give him a little more of the Burroughs spirit, a keener appreciation of Ernest Seton-Thompson or Thoreau, a greater desire for the things at hand and you will have solved to a large extent the question of the boy and the farm.

Since Agriculture has an educational value how shall it be taught? Should it be compulsory and have a place on our programme? If we do this the time allotted for the recitation must be taken from some other branch. Our course is already crowded. Both teachers and pupils find themselves driven from one task to another. The branches that give definite information and upon which all other work is based, can not be neglected. I believe we should admit the subject just so far as the educational value will permit. I believe in the essentials first, those of lesser import after. Our teachers are not prepared to teach Agriculture. They know very little about it. Imagine if you can a young town girl, attempting her first term of school and handling the subject of beef cattle, dairying, etc. I am afraid her reputation for for wisdom would soon be shattered; her standing in the community lowered and her future usefulness in that school impaired.

But our teachers can learn. If given an opportunity they will make themselves proficient. Schools are necessary for this and at present we are not sufficiently equipped. We must have some place for training. A place where our teachers can get the practical as well as the book knowledge; for in Agriculture the two go hand in hand as in no other branch?

I believe we can begin the study in our rural school library. Secure the best books at our disposal. Call attention to the value of the subject. Encourage, by parents and teachers, the reading of these books. Have our teachers devote a few opening sessions each week to subjects of special interest. In this way enthusiam may be gradually worked up and our teachers equipped to teach the subject intelligently. Unless we pursue some gradual system of introduction our efforts will cause a vast waste of time

In Dunn and Marathon counties, Wisconsin, "secondary education in agriculture is brought close home to the farmer by means of a County School of Agriculture." This was brought about largely through the efforts of Hon. L. D. Harvey, state superintendent. By comparing America's educational system with those of European countries, Mr. Harvey believed foreign systems worthy of emulation. He therefore decided to take up the cudgel in behalf of county schools. It did not seem feasible to introduce the subject in the rural school, owing to lack of experienced teachers. As the county high school was not permissible, he presented his cause to the State legislature, secured the proper enactments and with them a fair State appropriation. By the law passed the State would pay one-third of all running expenses, providing they did not exceed two thousand five hundred dollars. This plan was so successful the State increased its apportionment to four thousand dollars. Wisconsin now has two well equipped county schools, giving excellent instruction in Agriculture, Manual Training and the Science of Teaching. At Menominie the school includes Agriculture and Manual Training, while at Wausau a course in Agriculture and Science of Teaching is given.

These schools were built and equipped at an expense of twenty thousand dollars and sixteen thousand, respectively. (It might be well to state that a considerable amount was donated by private parties.) The annual running expense is about six thousand dollars. Of this amount the State pays four thousand dollars. Thus we can see that the county has an excellent school at a total expense of two thousand dollars. The taxes of Dunn county, have not been noticeably affected. The taxable property is about ten and one-half millions of dollars. ''Any person assessed one hundred dollars would pay almost two cents toward support of the school. An assessment of one thousand dollars would increase the taxes less than twenty cents.'' At a glance we can see that the annual cost to individual taxpayers is almost nothing.

In each school the tuition is free to all residents of the county. Those outside pay ten dollars per year. The cost of living for students at Menominie is about three dollars per week but they may board themselves for two dollars per week and even less. Since the school is located near the center of the county, many pupils are able to attend school with much less expense as they receive many things from home. Any average ambitious boy can make his way through one of these schools. For a term of twelve weeks, his minimum expense would be fifteen dollars. This amount he could earn during the term, allowing vacations for laying up a small reserve.

In most town schools certain requirements are demanded for entering the high school. This is necessary for the child's welfare. The requirements for entrance to the County Agricultural School are only such as will enable him to carry on his work successfully. Any pupil can gain admission even though he may not have finished the rural work. The common branches are reviewed, giving him a business training especially for his work. He would on completing his course know little about Latin or Geometry but could build a corner cupboard, make his mother a clothes reel or do, reasonably well, a job of blacksmithing.

The school at Menominie is steadily growing in numbers, influence and efficiency. It is becoming more popular not only with the farmers but with the general public. Each year they hold farmers institutes in various parts of the county discussing carefully such subjects as you have here but to better advantage. The teachers know the soils, the climatic influences, the dairying conditions and can give more accurate information.

Their experiments are made under conditions found at the farm, thus making them more valuable. They even make the experiments for the farmers such as testing milk, thereby the farmers are enabled to cull their herds of low grade milch cows. Seed corn is tested, soils analyzed and many other valuable helps that could not be obtained in a general way. The whole community is aroused to intense interest in industrial education and their school is famous throughout the United States. The farmers' children receive training in cooking, sewing, millinery, laundering, hygiene, home economy, blacksmithing, farm carpentering, rural architecture, stock feeding, care of soil and fertilizers, farm accounts, poultry dairying and science of agriculture, in addition to other branches.

A wave of interest seems to be surging over the country. The young people are anxious to complete their work, upon which they nearly always return to the farm, there to succeed. Some are taking up the duties of leadership, but many more are in a quiet way setting an example that gives a helpful tone to country life and setting the pace for others. Their course has given them a broader vision of life, has taught them to depend upon their own efforts of hand. It has taught them that agricultural pursuits must have a place in the science. A new dignity is given to their work, and these students feel they can meet the business men and the world in a business way because they have been trained in their profession and are specialists.

But how are we in Delaware county to receive benefit from such schools? Situated as we are amidst most favorable circumstances for such industries we may well ponder establishing such an institution. Seventy per cent of our people are engaged in agriculture pursuits. Tis true their children are within easy reach of good schools but do they specially fit them for their calling? Does public sentiment demand such a school? If it does can such a school be established under our present law? The first question I can not answer, but if it does, I believe the sentiment will creep out sufficient to make itself felt. I believe it now is possible to establish such a school. Section 2728, Iowa School Law provides for county high schools and the few following sections leave it descretionary with the board to determine the course of study. A high school giving special attention to training of teachers, also furnishing an elementary course in agriculture might be established. Some special legislation would, however, smooth the way, and make it easier to do the best work. The county must, of course, assume all financial responsibility, for our State now makes no appropriation. We could, without burden, carry on such a school. The assessed valuation in Delaware county is about six million dollars. To build and equip such a school would cost fifteen thousand dollars. The annual running expenses would be, on the basis of other schools, six thousand dollars. This in the aggregate seems an immense sum but when apportioned among the many tax-payers dwindles to almost insignificance. A tax of two and one-half mills would furnish necessary grounds and equipment. A five-sixth mill tax would provide for current expenses. Let us carry our figures a little farther; a person assessed one thousand dollars would pay eighty-three cents extra. A man owning an average eighty-acre farm in Milo township would have his taxes increased less than sixty cents. In Bremen township the same amount of land would raise the tax eighty-one cents. We might bring the matter still nearer home. A representative farmer in Oneida township, whose name I shall not mention, would pay one dollar and four cents extra tax, should Delaware county establish a county high school.

I have given you the above figures for your careful consideration. I do not expect that we will plunge immediately into something now hardly thought of, nor do I think it best that we should, but again I say it is worthy of thoughtful consideration.

In addition to training farmers, we could successfully train our young teachers—a thing Iowa sadly needs today. Delaware county employed two hundred and fifty-eight different teachers last year. Forty had never taught before, and more than half had received no special training. If we could but train these teachers—give them something more than the common school can provide—we would remove much of the difficulty in our rural schools. The teacher should have a liberal education, be bubbling over with enthusiasm for her work and should know what she is to do when she enters the schoolroom. When this fact becomes a reality then may we expect our schools to fulfill their mission. We feel sure the influence of a county school would not stop with the boy or girl on the farm but would pass to other callings. That there would be a general awakening in our schools as our boys and girls come under the influence of an enthusiastic, trained teacher.

## BIRDS IN THEIR RELATION TO AGRICULTURE.

*Mrs. J. J. Smart, Before the Humboldt County Farmers' Institute.*

Scientists regard the relation of birds to agriculture as a most important one. The more we, who are not scientists, observe for ourselves along this line, the more convinced do we become that it is important, and therefore the more anxious we are to have this knowledge made more general—extending not only to the heads of families but to every child in each one of these families. We would have them know the birds not only in this one relation to man, but in their various relations to him. This means years of careful study and observation, but since it is done at odd times, principally during our walks, on our way to and from town, and while working in our gardens, and since it soon becomes one of the joys of country life, it should be encouraged, especially in the children.

This one relation, however, the relation of the birds to agriculture, is the one in which the farmer is especially interested, and it is this particular relation we are to consider this afternoon. If we were to go into a grove or orchard today, we should probably see something there that would throw some light upon this question at once. We should in all probability see the downy and hairy woodpeckers climbing up and around the trunks of the various trees, exploring each tiny crack and crevice in the bark as they climb—lingering sometimes on one side, sometimes on the other, tapping first here, then there, with their hard bills. We should know, of course, that it was food they were in search of, but we should need to go to the scientist to find out just what this food consists of, and from this we should be able to judge whether these birds are friends or enemies of the trees. The scientists employed by our Government have examined the contents of the stomachs of hundreds of these birds, as they have of all birds about which there is any question. These scientists tell us that from two-thirds to three-fourths of the downy and hairy woodpecker's food consists of the eggs and larvas of injurious insects which they find in and behind the bark of trees, and this is true not only of downy and hairy birds who live here all the year around, but of the summer residents as well, the flicker and red-head. The rest of their food consists largely of small fruits and berries. Woodpeckers seem to be the only birds able to destroy certain insect enemies of the forests, and are therefore deserving of every possible protection.

During our stay in the orchard, if we listen and look sharp, we may see a pair of white-breasted nuthatches or a flock of black-capped chickadees climbing over the bark of the trees, in the manner of the woodpeckers, except that they climb downward as well as upward, and do not use their tail as a support. Our scientists tell us that they take the smaller eggs and larvae overlooked by the woodpeckers. The trees have another faithful friend in the little brown creeper, to me one of the dearest of birds. He has such queer little ways all his own, one being that he creeps up to the very top of the tree and then what does he do but fly or rather drop to the very base of another or perhaps the same tree, and this he repeats seemingly all day long in his endless search for food.

But we have other workers here these days and they are just as busy as the woodpeckers, chicadees, nuthatches and little brown creeper; they do not seem to mind the cold either. Food is what they are looking too, but it is so different from that of the woodpeckers. It consists almost entirely of weed-seeds, those noxious weeds we try so hard to destroy during the summer. One of our stanchest helpers in this work is our own dear bobwhite, who has been known to have as many as four hundred pig-weed seeds in his crop at one time. Another one had five hundred seeds of ragweed, and one bobwhite had 640 seeds of pigeon-grass. In the summer he is very fond of potato bugs, chinch bugs, cutworms and grasshoppers. I am sure if the farmer knew the real value of the quail, they would not only protect those on their own farms, but would see to it that the law would protect them everywhere and all the year around, and the prairie chickens, too, as they also are great seed-eaters. We often hear it said "We may as well shoot the quail, they will be smoothered by the snow in winter anyway." This it seems to me is all the more a reason why they should be so rigidly protected. In years past when there were fewer people, we had great flocks of quail and prairie chickens, and there was just as much snow those days as there is now.

Besides the quail and prairie chickens, we have other seed-eaters. They are the tree sparrows and juncos, a large flock of which live in our grove and orchard every winter. Winter visitants we call them, because they come from farther north to spend their winters with us. Professor Beal of the Biologicial survey examined the stomachs of many tree sparrows and found them entirely filled with weed-seed, and concluded that each bird consumed at least a quarter of an ounce daily. Upon this basis, after making a fair allowance of the number of birds to the square mile, he calculated that in the State of Iowa alone, the tree sparrows annually destroy about one million seven hundred and fifty thousand pounds, or about eight hundred and seventy-five tons of weed-seed during their winter sojourn. For several weeks during the spring and fall migration the tree sparrow and juncos are assisted in their destruction of weed-seeds by their near relatives, the white throated and white crowned sparrows, savanna sparrows, song sparrows and fox colored sparrows that are on their way either to or from their nesting places farther north. These that are residents here during the summer are the dickcissel, the field sparrow, the chipping sparrow, and the grasshopper sparrow.

Flocks of goldfinches often remain with us during the winter. Unless we are very careful observers, however, we shall not recognize them for now they wear a coat of olive green, instead of their beautiful black and yellow garment of the summer. They too, are, great seed-eaters and one of the most useful of our birds, their favorite food being the seed of the thistle and dandelion. We have two other birds that are great seed-eaters and therefore we often have them with us all the year. They are the mourning dove and the prairie horned lark. The mourning dove is especially fond of weed-seeds. In one stomach were found six thousand four hundred seeds of fox-tail.

The bluejay now and then shows some bad traits of character, but since he stays with us all winter and is so industrious and beautiful to look at, we are all more than glad to have him for a winter neighbor at least.

Now we will take just a glimpse of an entirely different class of birds, different especially in their food. They are the crows, hawks and owls. They crow, one species of owl and two of hawks are placed upon the black list by many, because they sometime destroy poultry. The contents of more than a hundred stomachs of these chicken eaters have been examined, and in them were found more of the remains of ground squirrels and rabbits than of any other food save mice.

Hundreds of crows roost in our grove near the house every winter and so far have given us no trouble whatever. The little corn they have eaten they are welcome to, the most of it would have gone to waste anyway. I think we ought to be willing to give them something for ridding us of the noxious insects they feed their young upon during the summer. This food consists largely of May beetles, grasshopers, cutworms, and other equally injurious kinds.

One good farmer who has made birds a study believes that the good qualities of owls, hawks, and crows, far outweigh their bad ones, and that so far as he can he will always protect all of them. The only bird he will wage war against is the English sparrow.

Now we will consider that great class of birds, that come in the spring, build their nests, rear their young, then fly away again to their homes in the south. They are our summer residents. Some morning very soon now we we shall hear a familiar sound just outside our door; on looking out we shall see our last summer's robin, and he will see us too. The first thing we know he will run four or five feet away, stick his bill into the ground when lo! he will have a worm, and we will wonder, as we have wondered hundreds of times before, how he could possibly have known it was there. Almost at the same time the bluebirds and blackbirds will come, then the meadow lark, cowbird, towhee, wren, brown thrasher, wood thrush, catbird, bobolink, and rose-breasted grosbeak. These birds feed mostly upon injurious insects, found on or near the ground, the rose-breasted grosbeak being especially fond of potato bugs. The robin, catbird and brown thrasher like fruit in its season, and we are willing they should have it too when we know the good they do us in the destruction of insects, and too, because of their delightful companionship.

Somewhat later in their arrival are the yellow-billed cuckoo, the black-billed cuckoo, the yellow warbler, the red-eyed vireo, the warbling vireo, the Baltimore oriole, the orchard oriole, and the scarlet tanager. These birds get their food principally from the trees. It consists of caterpillars and other insects hatched from the eggs overlooked by the woodpeckers, chickadees, and nuthatches. These are birds assisted every spring and fall by the great army of wood warblers on their way to and from their nesting grounds farther north. During this season our orchard seems actually to be alive with flashing wings, eating bills, and singing throats.

Among these later arrivals are birds that wage a continuous warfare against the mosquitoes, flying ants, gnats, flies, beetles, moths, and all the other insect life of the air. These are the swallows, and the birds belonging to the flycatcher family, such as the king-bird, phœbe, woodpewee, least flycatcher, great crested flycatcher and others. This work is continued into the night by the nighthawk and whippoorwill.

Since the birds work so faithfully and continuously for us, we may well ask what we are doing for them.

It is said on good authority that each cat is responsible for about fifty song-birds a year, and one cat was known to destroy six birds' nest in a single day. Some bird lovers keep their cats shut up during the nesting season.

Were we to remain upon the farm this summer I should have a corn crib made cat-tight and care for the cats in that during the nesting season, at least, or until the young birds were able to fly.

There are many things we can do to attract the birds to our homes, one being to set out mulberry trees, and Juneberry bushes, the fruit of which the birds are exceedingly fond of, so much so that they will leave strawberries, and even cherries, for these, to them, more luscious fruits.

These birds which I have called by their names and many species besides, numbering in all over seventy, have been identified in this vicinity by myself and others. There are several birds here at certain seasons of the year which we have thus far been unable to fully identify, and there is no doubt in my mind that there are many we have not even had a glimpse of.

I came across this quotation from the Bible the other day, found in Deut. 22:6-7, with which I will close my paper:

> "If a bird's nest chance to be before the in the way, in any tree or on the ground, whether they be young ones, or eggs, and the dam sitting upon the young, or upon the eggs, thou shalt not take the dam with the young; but thou shalt in any wise let the dam go, that it may be well with thee, and that thou mayest prolong thy days."

# SILOS AND SILAGE.

*Jas. F. Clark & Son, Before the Monroe County Farmers' Institute.*

Silos and silage are not a new subject, having been in existance a great many years. Although not much used in this locality, therefore to some the matter may appear entirely new. As we understand it the silo originally meant a pit in the ground into which green feed was put to preserve it indefinitely which was called ensilage, the principle involved was that of hermetically sealing it for a close fitting follower was made to put on top of the contents in the silo, and an immense weight of earth or stone put on top to weight it down. Modern silos are built entirely upon a different plan. They are mostly built on top of the ground, and of round construction. The object always being to make it air tight, also the weight on top has been discarded, it having beem found that the silage would seal itseif with only a slight waste.

Corn, cane, clover, peas, sorg, beans, alfalfa, millet, in fact most of the green forage plants may be preserved in this way, always preferable to be first run through a feed cutter.

A very important matter and one that every one must settle for himself, is who needs and who does not need a silo, but a few suggestions along this line may not come amiss. It is safe to say that high-priced land, intense farming and the silo goes hand in hand. The man who has more grass and more pasture, more hay than he can use, needs no silo, what he needs is more cattle or horses to eat that feed. Our experiment stations claim that there are a least 40 per cent of the nutritive value in the stocks of our corn crop. The man who cuts and shocks his corn, hauls and shreds his fodder has plenty of work and expense, lots of fun. We know by experience. True, he saves a great expense, a part of this 40 per cent nutrition. But for the man who has got no further along than to shock his corn off, leaving his fodder standing in the field, practically a total loss. A harbor for insects, a nuisance and offense to be got out of the way for next year's crop, he is only waisting his time to even think about a silo. He needs to learn to save his forage crop and needs more stock to eat it. The rich man might profit by the silo but it is with the poor man where the silo may be seen at its best, those who have only a small farm, grass and pasture scarce, can now with the aid of the silo feed and care for more stock than by any other process in the known world. Silos are constructed now mainly of three kinds of material, wood, cement and stone, there are many variations of patterns in each, also in price, from a few dollars away into many hundreds of dollars. A few figures may interest some. A hundred ton silo can be made to cost one hundred to five hundred dollars, owing to construction and material used; will take about ten acres of good corn to fill it, and will take about fifty dollars worth of labor to put it in silo, with a small ration of hay will winter forty head of cattle, with the silo located close to the barn stock and feed under all shelter, all safe from rats and mice, no freezing around to dig the fodder and feed out of the snow. The advantage that you can cut and save in the green state any and all forage stuff you may have at any time, put it right in and continue to feed out of it right along or save it to feed when grass and pasture fail in time of drought. You farmers who are in the milking business think of the advantage of good rich feed to give your cows at all times; please listen to what good authority has to say of silage for milch cows: "The economy of feeding silage in preference to any other sealing crops was conclusively demonstrated in the Pan-American model dairy this last year, as the awards were made on the economic production the effect of various rations were closely studied." In a letter recently received from Mr. S. J. Murphy, heardsman of the Guernseys, he says: "The supply of silage was exhausted about August 5th, and we found it absolutely impossible by any combination of grain and green sailing crops to maintain the flow of milk or production of butter without it any attempt to eliminate it from the ration, being followed by an immediate decrease in production."

The following is the summary of an experiment made by Professor Henry at the experimental farm Brandison. It is as far back as 1882.

First, as to the food, thirteen rows of fodder corn converted into silage actually lasted two cows seventy days. Thirteen other rows equal in all ways to those made into ensilage, when cut, shocked, bound into bundles and housed lasted two cows forty-seven days. In this regard the value of the ensilage exceeded that of the corn fodder by nearly fifty per cent. Of the three thousand eight hundred seventy-four pounds of dry fodder fed one thousand five hundred sixty-eight pounds were never eaten but left as refuse stalks. This is about forty per cent of the whole amount fed, and the result of this experiment was a gain of ten per cent more milk and eleven per cent more butter. If time and space permitted we might go on giving expert testimony as to the many advantages of silage for feeding all kinds of farm animals, but volumes have been written on the subject and those who may become interested can easily find what they are looking for or see a living demonstration of the thing itself, with but little inconvenience to themselves, and if these few lines shall have been of any assistance to any one, then their mission shall be fulfilled and the writer feel himself rewarded thereby.

## SILOS.

*Geo. V. Fowler, Before the Black Hawk County Farmers' Institute.*

Your secretary has assigned me a paper on the Silo, and I infer that the subject includes ensilage as well. I do not deem it wise to take much of your time as I have had no experience with ensilage, and what I will give you will be only what I have picked up by coming in contact with some of the best farmers in different parts of the country, just as I am doing now.

I built a silo last fall after the plan of H. C. Geuler, of De Kalb, Illinois, which I believe to be the best type. Mr. Gueler now has five and as he sells all of his milk to consumers in Chicago, at twelve cents per quart, which is positive proof of its being a success. It seems strange to me that many people consider it good feed for cows but not so good for the steers. I never heard of anyone figuring this way with any other class of animals. Last fall I went to Geneseo, New York, the famous Genesee flats, and had the pleasure of meeting Hon. James Wadsworth, member of Congress, who has four thousand acres of that fine land and turns off five hundred head of steers per year for export. He feeds silage and hay only through the winter, making a gain of about one hundred pounds on an average during the winter and fattens on blue grass, and sells in September. Last fall he sold for $5.25 at home He never fed any corn. His silage was the husks from the canning factory and just simply piled up.

I also saw Mr. White, of Genesee county, N. Y., who feeds one hundred and fifty calves during the winter, selling in July and August. He uses silage from corn. Then I met Mr. H, C. Gardner, of Brockport, Monroe county, N. Y., who fills his silo with alfalfa and feeds from it continually during the summer, and is well pleased with the results.

Then there is Mr. Humphrey Jones, of Washington Court House, Ohio, who fed one hundred and seventy-eight head of steers with silage and grain, and says he never made beef so cheaply. Others have fed beet pulp, which is practically silage, starting low and running up to eighty pounds and running down to forty pounds toward the finish. They also report good results. It is needless to state that I believe in the silo, and yet I would recommend feeding about as I intend to do until convinced that its further use is more profitable.

We are now feeding fifty calves. They eat twelve to fifteen pounds each of the husk silage from the canning factory, roughage being sweet corn fodder, grain feed at present being ten pounds corn, and cob, one and one-half pounds gluten, and one pound of oilmeal.

We also have forty-five yearling steers which get fifteen pounds of sorghum, about fifty pounds of corn husk silage and two bushels of corn and cob, and are doing fairly well. Now I am inclined to believe sorghum to be the nearest like silage, and so the best substitute for silage of any dry feed, and sweet corn fodder next. So I would say, use this roughage during the winter, and in March or April open the silo and feed during the spring, when most difficult to provide cheap good roughage, also to feed during July and August, while pastures are short.

The foregoing is more to create a discussion than for the information contained therein.

Iowa Farm Scene.

# *ALFALFA IN INDIANA.

*A. T. Wiancko and M. L. Fisher in Bulletin Issued by the Purdue University Experiment Station.*

## INTRODUCTION.

During the past few years a widespread and increasing interest in alfalfa culture has sprung up in Indiana. Hundreds of inquiries have come to this station, showing that farmers in all parts of the State are seriously thinking of trying the crop. The questions asked are generally quite comprehensive and concern its general characteristics, its adaptation to certain local conditions, its feeding value, methods of seeding, inoculation, later treatment, etc.

To meet this demand for knowledge about alfalfa an investigation was begun in the spring of 1903 with a view to ascertaining the suitability of the soil and climatic conditions of Indiana for the profitable production of the crop. With the co-operation of students of the School of Agriculture and other interested farmers a number of experimental plots were established in every section of the State under widely differing conditions. In each case different methods of seeding, with and without inoculation, were tried and other valuable information about its production in the State has been collected. The results of these investigations prove beyond a reasonable doubt that alfalfa deserves a place in Indiana agriculture.

The object of this bulletin is to make known to our farmers what has been learned about the culture of the crop in the State, and to assist those who wish to use it.

## HISTORY.

Alfalfa is one of the oldest cultivated forage plants. It was used by the Egyptians, Greeks, Romans and other nations of the East long before the beginning of the Christian era. It is a native of the southern and western portions of Asia, thriving particularly well in the higher and drier regions. It was early introduced into Spain and the Spaniards carried it into South America and Mexico. Its introduction into the United States dates as far back as 1820, when it was tried in New York State. It was brought from Chili to California about fifty years ago and now flourishes throughout the arid and semi-arid west as perhaps in no other region of the world. On account of its hardy, dought-resistant qualities it is particularly well adapted to high, dry regions. From California it rapidly spread eastward and is now grown in almost every State and Territory in the Union. Its high feeding value, great yielding power and adaptation to widely varying soil and climate conditions have made it deservedly popular wherever it has been grown.

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*The increasing interest throughout Iowa in Alfalfa culture has led us to believe that information along this line would be appreciated by the farmers of the State, and as our experiment station has not as yet issued a bulletin treating on this subject we publish the following bulletin from our sister state, where the conditions are similar to those of Iowa.

## DESCRIPTION AND GENERAL CHARACTERISTICS.

Alfalfa (*Medicago sativa*) is a number of the family botanically known as the Leguminosæ, to which also belong the clovers, peas, beans, vetches, and other plants with pea-like blossoms and podded fruits. It is an upright, branching, smooth, perennial plant, growing from one to three feet in height. Its stems are somewhat coarser in appearance than those of red clover. The young plant sends up a single main stem. When this is cut off and the plant grows older, more and more stems shoot up from near the ground. In old plants that have been cut off many times the stems become very numerous, sometimes as many as a hundred springing from a single crown. The leaves are three parted, somewhat longer and much narrower than those of red clover and somewhat toothed around the apex. They are much more numerous than on red clover and are very nutritious. The whole plant has a characteristic deep green color when in a healthy condition, especially in a dry season.

The small pea-like flowers are purplish to pinkish in color and are borne in loose clusters or racemes along the smaller stems and branches. The ripe seed-pods are spirally twisted, forming two or three complete curves, and each pod contains several seeds. The seeds are kidney shaped, yellowish brown in color, and about a half larger than red clover seeds.

Like all members of the clover family, alfalfa has a strong tap root which it sends deeply into the soil. These roots sometimes exceed an inch in diameter, and in open soil often extends downwards to a depth of fifteen to twenty feet, and much greater depths have been recorded. The great power of alfalfa roots to penetrate hard soils is well illustrated on the experimental farm here at LaFayette, where roots have been dug up which penetrated through a foot and a half of hardpan, composed of fine silt and gravel, which could hardly be broken up with a pick. As the root extends downwards, numerous fine, lateral roots are produced, completely filling the soil and extending the feeding area to immense proportions. This enormous development of roots, and the great depth to which they penetrate, enables the plant to gather food and moisture from depths not reached by ordinary plants. Much mineral food is thus brought to the surface and the roots, when they decay, leave the soil full of small, tube-like channels which faciliate drainage and the aeration of the soil, a benefit which may be very considerable in close textured soils.

Alfalfa, like the clovers, has the power of assimilating the free nitrogen of the atmosphere through the agency of bacteria which develop numerous small nodules, or tubercles on its roots. These nodules contain millions of bacteria which live on the juices of the root and in the process of their development supply the plant with available forms of nitrogen which they have the power to form from the practically unlimited supply in the air. This gives the plant a very important additional value as a farm crop, since it enriches the soil with large quantities of available nitrogen for the use of succeeding crops. Thus where alfalfa is grown it will be necessary to supply the soil with only mineral plant food; the alfalfa and its bacteria will look after and increase the nitrogen supply.

Alfalfa, by reason of the large crops produced, draws heavily upon the mineral plant food in the soil, using large quantities of potash, lime and phosphoric acid. It is true that by means of its deep roots it obtains food from depths not reached by other crops, but it must be remembered that in humid regions the subsoils often contain comparatively little available food and that, therefore, even so deep rooted a crop as alfalfa may not be able indefinitely to secure all the mineral plant food necessary for its best development. As a matter of fact it will generally respond well to liberal applications of mineral fertilizers, and where long grown it will often be necessary to supply it with potash, phosphoric acid and lime. Except on limestone soils, a moderate application of air-slacked lime at the time the seed-bed is being prepared, will generally be very beneficial.

## FEEDING VALUE OF ALFALFA.

As a food for all kinds of live stock alfalfa is the king of forage crops. It is especially rich in protein, or flesh forming material, and is well adapted for use in a ration with corn which is relatively low in protein content. It makes excellent hay and is more digestible than most forms of rough feed. As a pasture and soiling crop it has few, if any, equals and one of the qualities which recommend it most highly is its rapid growth. For soiling purposes it can be cut four or five times in a season and for hay it will usually yield three good crops in Indiana and sometimes four. As a pasture for hogs it is unexcelled. It helps to keep the animals in healthy condition. Hogs running on good alfalfa pasture are much less liable to cholera and other germ diseases. It also makes excellent pasture for cattle, sheep and horses. In pasturing ruminating animals on alfalfa it is, of course, necessary to take the same precautions to prevent bloating as are necessary when pasturing clover.

### TABLE SHOWING TOTAL DRY MATTER AND DIGESTIBLE NUTRIENTS IN ONE HUNDRED POUNDS OF ALFALFA, RED CLOVER, TIMOTHY, WHEAT BRAN AND CORN.*

| Feeds. | Total Dry Matter. | Digestible Protein. | Digestible Car'hydrates. | Digestible Fat. |
|---|---|---|---|---|
| Alfalfa | 91.6 | 11.0 | 39.6 | 1.2 |
| Red Clover | 84.7 | 6.8 | 35.8 | 1.7 |
| Timothy | 86.8 | 2.8 | 43.4 | 1.4 |
| Wheat Bran | 87.7 | 12.3 | 37.1 | 2.6 |
| Corn (grain) | 89.4 | 7.8 | 66.7 | 4.3 |

*Compiled from Henry's "Feeds and Feeding."

## SUMMARY OF RESULTS OF EXPERIMENTS.

In the spring of 1903 twenty-three experimental plots were established in as many different counties of the State. The soil ranged from heavy clay to light sandy loam. In each case the alfalfa was sown with and without a nurse crop. The nurse crops consisted of light seedings of oats or barley. Each plot occupied one quarter of an acre and all were inoculated with soil from old alfalfa fields which contained the alfalfa bacteria. The soil was applied broadcast at the rate of one hundred pounds of dry soil per acre. The alfalfa seed was sown at the rate of twenty pounds per acre. The seeding was done at different times, the dates ranging from April 10th to June 15th. Of eighteen satisfactory reports secured in the following autumn, eleven showed good condition, six fair and one rather poor condition. Seven reported best stand without a nurse crop, four with a nurse crop and six reported no difference. Of those reporting *fair* condition, five reported damage done by dry weather shortly after the crop came up. Of those reporting *good* condition, seven reported nodules on the roots, one none, and three did not examine the roots. Of the second group, four reported some nodules, two found no nodules and one was doubtful. The one reporting *poor* condition found no nodules on the roots.

In the spring of 1904 nine additional plots were established in other sections. The general plan of the experiments was the same as in 1903, except that only one-half of each plot was inoculated, and in such a way that each plot was virtually divided into quarters, one having alfalfa, nurse crop and bacteria, another alfalfa and nurse crop, another alfalfa and bacteria and the fourth only alfalfa. The object of this plan was to determine not only the advisability of using a nurse crop but also the necessity of inoculation

## SUMMARY OF ALFALFA EXPERIMENTS.

| County. | Kind of Soil. | Kind of Subsoil. | Depth to standing water. | Date of sowing. | Stand with nurse crop. | Stand without nurse crop. | Fall Condition. | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Inoculated Plat. | Uninoculated Plat. |
| 1903 | | | | | | | | |
| Lake | Sandy | Rather compact. | 15 to 20 feet. | May 12 | Good. | Good. | Good | Good. |
| Benton | Loamy | Open | 12 feet | April 10 | Good. | Good. | Good | Good. |
| Marshall. | Sandy | Gravel | 8 feet | April 23 | Good. | Good. | Good | Fair. |
| Marshall | Clay loam | Compact | 4 feet | April 28 | Good. | Good. | Good | Poor. |
| Tipton | Clay and black loam | Clay | 4 feet | May 20 | Good. | Fair. | Good | Good. |
| Wells | Clay and black loam | Clay | 4 feet | June 15 | Good. | Good. | No inoculation | Good. |
| Madison | Sandy loam | Rather compact | 15 feet | April 15 | Fair. | Good | Good | Fair. |
| Delaware | Clay | Clay | 10 feet | April 25 | Fair. | Good. | Fair | Fair. |
| Fayette | Clay loam | Clay | 15 feet | May 27 | Good. | Good. | Good | Good. |
| Morgan | Sandy | Open | 30 feet | April 10 | Poor. | Good. | No inoculation | Good. |
| Bartholomew | Clay | Red clay | 20 feet | April 27 | Good. | Good. | Fair | All inoculated. |
| Johnson | Sandy | Open | 8 feet | Early | Good. | ....... | No inoculation | Good. |
| Greene | Clay | Compact | ....... | May 25 | Fair. | Good. | Fair | Fair. |
| Knox | Clay | Yellow clay | 10 to 20 feet. | April 28 | Good | Fair. | Fair | Poor. |
| Daviess | Yellow clay | Yellow clay | 4 feet | May 23 | Fair. | Good. | Fair | Poor. |
| Pike | Sandy | Compact | 20 feet | April 30 | Fair. | Good. | Fair | All inoculated. |
| Washington | Loam | Clay | 60 feet | May 1 | Fair. | Good. | Fair | Fair. |
| Perry | Clay loam | Clay | 10 feet | April 29 | Good. | Fair. | Good | Fair. |
| 1904 | | | | | | | | |
| Marshall | Clay loam | Compact | 10 feet | April 22 | Good. | Good. | Good | Good. |
| White | Black loam | Clay | 5 feet | May 27 | Good. | Fair. | Good | Good. |
| Miami | Sandy | Open | 4 to 6 feet. | June 13 | ....... | Fair. | Fair | ....... |
| Montgomery | Sandy clay | Open | 3 to 4 feet. | ....... | Good. | Good. | Fair | Fair. |
| Fayette | Sandy loam | Open | 5 feet | Late | Fair. | Fair. | Fair | Fair. |
| Wayne | Sandy clay | Gravel | 6 to 8 feet | May 15 | Fair. | Fair. | Fair | Fair. |
| Knox | Clay | Compact | 10 feet | April 22 | Poor. | Fair. | Fair | Fair. |

The results of the experiments as a whole indicate that good stands of alfalfa may be secured on almost any of the soils of the State, though the more open soils seem to be preferable. They also indicate that inoculation of the soil is desirable and, in most cases, necessary. As to the best time to sow alfalfa, the experiments are inconclusive unless they be taken to indicate that a good stand can be secured at almost any time from early April to June. The experiments also seem to indicate that there is still room for argument as to whether or not a nurse crop should be used, though on the whole the chances seem in favor of sowing the alfalfa alone.

## SUMMARY OF OTHER REPORTS.

In addition to the results of the experiments under the direction of the station, a number of valuable reports from farmers growing alfalfa in various parts of the State were secured. Report blanks with numerous questions were sent out to all growers of the crop in the State who could be located and thirty-eight complete reports were received. Of these, thirty-two reported the crop a success. Of the failures reported, two were attributed to lack of inoculation, one to winter killing, one to careless pasturing, one to poor drainage and one to drought after seeding. In reply to the question: What are the causes of failure? Fourteen replied, weeds; six, no occulation; eight, poor drainage; four, early pasturing; and three, drought after seeding. Good stands were reported on all kinds of soil, from light sands to the heaviest clays. In the majority of cases the seeding was done in April or early in May. About sixty-five per cent of the fields were seeded without a nurse crop. The treatment during the first season was in nearly all cases clipping at intervals to check weed growth. Only two growers gave their fields any treatment, except mowing, after the first season. In one case discing is practiced in spring and early fall and in the other after each cutting for hay, when the ground is dry. Both these farmers are extensive and very successful growers of alfalfa. In the majority of the cases reported the number of cuttings, per season, for hay is three and the average yield of dry hay per season is three and one-half to four tons, while three of the largest growers report averages of about five tons per season. In all cases, except one, where pasturing was practiced satisfactory results were reported.

The reports summarized above cover an aggregate of two hundred sixty acres of alfalfa, standing at the time the reports were made, and the great majority of the growers expressed themselves as highly satisfied with the crop.

## SOIL AND SITUATION FOR ALFALFA.

The beginner in Alfalfa culture should be careful to select a piece of ground that is well suited as a home for the crop. It will do best on deep loams with rather open subsoils and deep, natural drainage. Numerous reports show that good results can be secured on almost any fertile soil, provided that it has good drainage. Where natural drainage is imperfect, deep, artificial underdrainage may, to a large extent, take its place. Good drainage is absolutely necessary for alfalfa, because, for its best development, the roots must be permitted to penetrate deeply into the soil. It will not thrive with its roots in standing water. Lands subject to overflow are unfit for alfalfa. As a rule alfalfa should never be put on low bottom lands where grasses naturally do well, because the situation is likely to be too wet. High situations are therefore preferable. The only high lands not suited to alfalfa are those having either hardpan or a very gravelly subsoil.

Alfalfa does not reach its best development until three or more years old. For this reason the situation selected for its growth should be one in which it can be left for a number of years. For the same reason the crop is not suited to an ordinary rotation.

### SEEDING.

The soil for alfalfa must be free of weed seeds, and a fine, deep seed bed must be provided. Alfalfa plants while young are delicate and easily smothered by weeds. Clean culture is therefore necessary. The seeds are small and must have a fine seed-bed in order that germination and early growth may be facilitated. Since the crop is to remain in the same situation for a number of years it will pay well to give careful attention to the preparation of the soil. A full stand of plants is essential and to secure that, as well as a strong early growth, a good seed bed is necessary. This point can not be too strongly emphasized. A good seed bed can usually be prepared after corn or some other cultivated crop that has been kept clean.

The time of seeding alfalfa does not seem to be very important so long as there is sufficient moisture to give the plants a good start. Usually, however, it will be best to sow some time before corn planting in order that the plants may develop a good root system before dry weather begins. After it is once well established the crop can stand very severe droughts

The seed may be sown either alone or with about a half seeding of oats or beardless barley. Where the ground is free of weed seeds it will usually be best to sow alone, but where weeds are likely to be troublesome a nurse crop should be used. In either case about twenty pounds of good seed per acre should be used. The seed may be sown broadcast and covered with a light harrow. If a nurse crop is used this may be drilled in the ordinary way and the alfalfa sown on top and lightly covered with a harrow or weeder.

The nurse crop should be cut for hay soon after it heads out, so as to give the alfalfa full possession of the soil before the hot weather sets in. If the nurse crop is allowed to mature the alfalfa will be shaded too long and will not develop sufficient strength to bear the sudden exposure to hot weather. In several instances successful stands of alfalfa have been secured by sowing in standing corn at the time of the last cultivation.

### INOCULATION.

Alfalfa, like all other legumes, requires, for its proper development a certain species of bacteria to work upon its roots and gather for it nitrogen from the atmosphere. If these bacteria are not present, the alfalfa will have to depend for its nitrogen upon the supply in the soil, which is usually not sufficient to insure a thrifty growth. In nearly all cases where alfalfa is grown for the first time inoculation is necessary and should not be neglected.

This inoculation may be effected by means of soil from an old alfalfa field where the bacteria are known to exist, or by treating the seed, shortly before sowing, with a pure culture of the alfalfa bacteria. If alfalfa soil is used, at least one hundred pounds per acre should be applied. Larger quantities will give quicker results. It may be sown by hand while the seed bed is being prepared, or at the time of seeding. On soils not rich in nitrogen a dressing of farmyard manure will give excellent results in giving the alfalfa a vigorous start until the bacteria become established.

## TREATMENT OF THE GROWING CROP.

If the alfalfa has been sown alone the field should be clipped with a mower as soon as the plants are about six inches high. This clipping is necessary, not only to check weed growth, but to strengthen the young alfalfa plants. The clipping causes the plants to branch out and grow with renewed vigor. This treatment should be repeated several times during the summer. Every clipping will strengthen the growth and it should in no case be neglected, because neglect may mean failure.

Where a nurse crop is used this should be made into hay at the proper stage and the clipping continued at intervals as in the case where no nurse crop is used. The clippings should generally be left on the ground.

After the first season, the alfalfa, unless it is used as a pasture, should be cut for hay every time about one-tenth of the heads are in bloom. After each cutting, if the ground is dry, it will usually be well to go over the field with a disc harrow. This is practiced by some of the best growers with excellent results. The discing splits the crowns and strengthens the growth. The disc must be set at a small angle so as not to cut off or tear out the plants. By some this discing is done in two directions, crossing each other at right angles.

## MAKING ALFALFA HAY.

To secure the largest amount of digestible nutrient per acre, alfalfa for hay should be cut when one-tenth, or at the most, one-fifth, of the blossoms have opened. Where much is to be cut it is well to begin early, because, as it gets older, alfalfa deteriorates very rapidly in feeding value. Many analyses and feeding experiments have been made by the experiment stations and all show that to get the best results alfalfa must be cut at a very much earlier stage of development than red clover. To begin cutting when one-tenth of the heads are in bloom is a good rule to follow. Late cutting not only means a poor quality of hay but is also detrimental to the development of the next cutting, so that early cutting should be practiced regardless of the weather.

During the curing process alfalfa must be carefully handled, because the leaves soon dry and are then easily broken off. The leaves are more valuable, pound for pound, than good wheat bran, and rough handling when dry may very much lessen the value of the hay. It should never be handled when perfectly dry. As a rule it is wise to use a tedder a few hours after mowing, or as soon as it is well wilted on the surface, and to rake it into loose windrows as soon as the rake will handle it. If the weather is good it may be cured in the windrow, but often it will be best to cure it in small high cocks. All subsequent handling when hauling to the barn or stack should be done while it is slightly moist with dew so that the loss of leaves may be reduced to a minimum. Rain injures alfalfa even more than it does clover. When placed in stacks, which should be done only when unavoidable, these should be topped with timothy hay or other material that will shed rain. As a rule alfalfa hay is somewhat more difficult to make and cure properly than is clover, but, in general, it may be said that the same methods will apply to both crops.

### PASTURING ALFALFA.

As a rule alfalfa should not be pastured the first season, and but lightly the second. At no time should it be pastured closely. By close pasturing the crowns of the plants are injured. Horses and sheep are more likely to do damage in this way than are cattle or hogs. On account of injury to the crowns from tramping, it should not be pastured when the ground is soft. As has been already stated, alfalfa makes excellent pasture for all kinds of live stock, being very nutritious and healthful. With cattle and sheep care must be taken to avoid bloating. The animals, at first, should be turned in for only a short time each day until they become accustomed to it, and when the alfalfa is wet, as after a rain, there is still greater need of care. It is wise to be a little more careful than with clover.

### SUMMARY AND CONCLUSIONS.

Good crops of alfalfa can be grown on almost all Indian soils that have good, deep drainage. Water must never stand on or near the surface.

It will yield from three to five tons of excellent hay per acre per season, and for soiling or pasture it has few equals.

It is rich in flesh forming nutrients and is excellent for feeding with corn or other starchy foods.

It is more digestible than red clover and is not far behind wheat bran in feeding value.

It is an excellent soil renovator, gathering nitrogen from the air, opening up the soil and bringing large quantities of mineral food from the subsoil.

It may be sown at any time from early spring to midsummer, provided there is sufficient moisture to give it a good start, but rather early sowing seems preferable.

The seed-bed must be deep and finely prepared and about twenty pounds of good seed per acre should be used. The seed should be lightly covered with a harrow or weeder.

It may be sown either with or without a nurse crop. The nurse crop is to be recommended where weeds are likely to be troublesome, but it should in all cases be cut for hay soon after it heads out. A half seeding of oats or beardless barley makes a good nurse crop.

Inoculation will be necessary in nearly all cases and should not be neglected.

A good dressing of farmyard manure will aid materially in securing a good stand and vigorous growth. It will also facilitate the inoculation process.

During the first season the growth should be cut down every time it reaches a height of five or six inches. Where a nurse crop is used this treatment should also be practiced after the latter has been removed.

If the crop is grown for hay it should be cut every time about one-tenth of the blooms have appeared. It is generally not wise to try to get a hay crop the first season.

Alfalfa should not be pastured the first season and never closely. When cattle or sheep are pastured on it, care must be taken to prevent bloating.

Cultivation with a disc harrow, set shallow, after cutting in July and August, if the soil is dry, is likely to be beneficial.

## LUCERNE OR ALFALFA.

*Wallaces' Farmer.*

Most of our readers regard alfalfa growing as a comparatively new thing; that it can be grown successfully only under irrigation or on the dryer and lighter lands west of the Missouri or in the Missouri valley. Under the name of Lucerne it was grown in the Eastern States nearly seventy years ago. Looking over an old volume of the monthly *Genesee Farmer* of the year 1833, we found a number of communications on the growing of what they called Lucerne grass. This is the same as alfalfa and was called Lucerne because it was brought into the Eastern States from the vicinity of Lucerne, Switzerland; whereas the alfalfa, as we know it, was brought by the Moors from the river Euphrates, where we have no doubt it grew luxuriantly in the time of Daniel and Ezekiel, if not in the time of Abraham. By the Spaniards it was taken to Chili and Peru and from thence apparently came to California and has in the last thirty or forty years been continually traveling eastward. We have no doubt that the environment has modified these two varieties, but botanically and for all intents and purposes they are the same.

One correspondent from Roxbury, Massachusetts, wrote a letter to the *Genesee Farmer* in 1835, then in 1838 sent it to the editor, stating that he had withheld it from a fear that he had annoyed the people with Lucerne grass and that they would begin to call him a man of one idea. Having cut a third crop on the 6th of October in a dry year, he ventured to send the communication to the *Genesee Farmer*, and, replying to a question as to what were the peculiar advantages which he had experienced from this grass he answered:

''First, double crops in wheat at least on the same extent of ground, having secured two good crops the first season in which it was sown; second, that it will endure the severest drought, when all other grasses fail; and, third, that it is a favorite grass with the horse and cow and will fatten them faster than any other grass; that it will do as much for a horse as an ample supply of grass and four pounds of grain, and aid in keeping flesh and strength.'' He states further, that his success is not due to any peculiar care or high culture; that he has treated it exactly like red clover and put it on his worst lands. He tells the farmer that it will not grow on moist, muddy lands at all; that it can not bear low lands; that it will die if water rests upon it in the winter. He explains the small attention given to its culture by the fact that the seed has to be imported and costs fourteen cents a pound and requires twenty pounds to the acre, and most men are not willing to go to that expense.

The next year another subscriber referring to this writer's experience writes that he gave up growing clover because of the very rapid growth of weeds and gave his attention to Lucerne, sowing it broadcast on the 19th of July, on a sandy loam; that in two months he pulled up a plant which measured thirty inches from the tip of the leaves to the point of the root; that he cut it on the 9th of June, 1837, and on the 9th of every subsequent month till October, the growth being eighteen inches a month. His conclusions are that Lucerne should be thickly sown, twenty pounds to the acre, upon sand or sandy loam with slope sufficient to carry off the water, and without hollows in which water can lodge. Second, that to prevent grass and weeds from creeping into the Lucerne there should be a border around it of five or six or more yards in width, in which should be grown every year mangel-wurzel, potatoes, or other roots which require the soil to be well weeded. He states further, that potatoes of the year previous are the best crop with which to prepare the land, and that it should be plowed once or twice before sowing, and not sown until the end of May or early in June.

It will be seen that these old farmers know as much about growing Lucerne as any of our modern up-to-date fellows. In fact, we think his suggestion that some kind of cultivated crop should be grown in a border around the alfalfa field is a very good one, judging at least from the way, according to our observation, in which weeds and grasses creep into alfalfa fields in Nebraska. In fact, before seeing the article we had adopted the practice in our own alfalfa fields in Nebraska.

## RAPE AS A CATCH CROP.

*Chicago Drovers' Journal.*

Not the least among the virtues of the rape plant is its great versatility in spite of the fact that it is subject to frost, so that too early sowing may prove its entire ruination. We have at various times pointed out the possibilities of rape for the farmer when sown as a crop by itself. We have not had a great deal to say of it as a catch crop, in spite of the fact that it possesses a market value when sown with or in certain other cops to come on after these have been harvested. Perhaps we can do no better in this connection than to quote from Farmers' Bulletin No. 164, by A. S. Hitchcock, who, in reviewing the topic ''rape as a forage crop,'' has this to say of it as a catch crop, after enumerating some of its value as a first crop:

''Another practice which is coming into favor in some sections of the country is to sow rape in the spring with some grain crop, such as wheat, allowing the former to take possession of the field when the latter has been removed. This is recommended for Nebraska by Professor Burnett, who sows broadcast on winter wheat at the rate of about two pounds per acre when the wheat is two or three inches high in the spring, or sows it upon oats when they are about the same height, following with a smoothing harrow. He states that in Minnesota and the Dakotas, with a good stand of rape in the stubble, sheep can be turned in about three weeks after cutting. Such a field will support ten or fifteen sheep per acre and keep them growing for six weeks. They feed on the weeds and scattered grain as well, which cleans the field and gives additional gain to the sheep.

''Sowing rape with oats was tried at the Iowa station, where the best results were obtained by using six pecks of oats and one pound of rape per acre, seeding the latter ten days after the oats. The soil was good, and a yield of sixty bushels of oats and eighteen tons of green rape per acre was obtained. The rape interfered somewhat with harvesting the oats, and it was thought that the rape might have been sown three weeks after the oats to better advantage. On poorer land the rape should be sown with or soon after the oats.

''Rape may also be sown in the cornfield, just before the last plowing, as is often done with rye and winter wheat. Experiments at the Wisconsin station show, however, that for conditions there this practice was not satisfactory, as the corn took the moisture that should have gone to the rape. Neither does this station recommend sowing rape with oats, as the young plants are likely to be so dried out when the crop is removed that the yield of rape is reduced.''

Were we to offer any comment upon the above recommendation it would probably be relative to the matter of sowing with other crops. For instance, on ordinarily good soil we would not recommend that sowing be done with oats, for the simple reason that the rape plant is such a vigorous grower that once it got started and doing better than the oat plants, the future of the latter would be very limited indeed. But if delayed until the oats have come up and have thus got a good start over the rape, we do not anticipate that there would be any difficulty with the one crowding out the other. In fact, the probabilities are that the oats would keep the rape plants down until they had reached their maturity and had been harvested. Then the rape would come on quickly and soon be ready for pasture. So much good can be secured from a crop of rape that we have repeatedly urged it before the attention of our readers.

Nor is the rape only suitable for the field as a pasture or green feed crop. Attention has been called to its availability as an exterminator of weeds. One authority speaks of this quality as follows:

''Aside from its value as forage, rape is an excellent crop to grow on fields that are foul with weeds. The late date at which the seed may be sown allows the weeds to get well started before the final preparation of the soil begins; they are further kept in check by the cultivation required for the crop during its early growth, and later the rape plants shade the ground so completely as to keep the weeds down. An excellent treatment for a foul field is to plow thoroughly in late summer or autumn and seed to rye or some other forage crop to be pastured off during the fall, winter or early spring. When the crop has been pastured sufficiently and before the weeds have produced seed, plow again, plant rape in drills, and give thorough cultivation. There are few weeds that will survive such treatment, and the land will have given profitable returns in forage in the meantime.''

Some have drilled rape, while others have sown it broadcast. We are of the opinion the that the latter method is preferable, unless the soil is poor and apt to be dry. In this case cultivation will undoubtedly increase its growth. When there is enough moisture and good soil to foster vigorous growth there will be little need of cultivation to keep down weeds or to stimulate further growth. In such a case sow the rape and it will take care of itself, and as an exterminator of weeds as a ''smother crop'' we think that it will fully meet the needs of the most sanguine.

## THE PROPER SEED BED.

*Wallaces' Farmer.*

We have had a good deal to say in past years about the preparation of the seed bed for growing crops. In this article we will deal particularly with the seed bed for corn.

There are some things which all well prepared seed beds have in common. Unlike animals, plants can't move from place to place. Their growth and the measure of the yield must be determined by conditions purely local. They can get no plant food from the soil except that within reach of their roots, and the soil must be in such condition that there can be as full, complete, and perfect root development as possible. This development of the root system measures to a great extent the use they can make of the plant food which they receive from the air, from which they receive, in fact, their greatest portion. The amount of carbon dioxide plants take in from the air depends upon the leaf surface. This depends on the amount of plant food they can get, always in a liquid form, from the soil; and the amount they get from the soil depends on the number of hair roots they can develop on the main roots, which are simply the conduits for carrying the soil solution into the plants. Again, all plants require an immense amount of water—oats about five hundred pounds for every pound of dry matter; corn about two hundred and seventy-five; clover, wheat, and barley a little over four hundred. All this requires a well prepared seed bed so that the roots may multiply.

Another fact that must not be overlooked is that the demands of the plants for water are greatest at a time when the rainfall is likely to be short. The corn plant, for example, gets from three-fourths to four-fifths of its dry matter between the time it begins to tassel and its full maturity, and this tasseling is in the driest period of the year. Water, not being generally obtainable in sufficient amounts from above, must be obtained from the soil below, and therefore the seed must be such as will put no restraint upon capillary action, but will allow the water in the subsoil to come up freely, as required.

The seed sown on stony land, of which the Saviour speaks in the parable, was that on a rocky ledge where it had no depth of earth, and which, while it grew quickly because of the greater heat of that kind of soil, perished because water could not come up through the ledge of rock below. Anything which will interfere with the rising of the water in the soil, whether it be rock or an impervious clay in the subsoil, or coarse, undecayed manure or vegetable matter, or great lumps in the bottom of the furrow, will make a short crop inevitable.

This is the reason why the winter wheat grower plows his stubble in August and compacts it well, keeping the upper part loose, before sowing his wheat. This is the reason why he does not plow his corn stubble land before sowing his wheat in the fall. He doesn't want to interfere with the upward movement of the water. This is the reason why a very cloddy field, no matter how rich, doesn't develop rapid plant growth until the clods become pulverized by some means and the air spaces closed up. This is one reason why the farmer prefers to plow sod in the fall, in order that the frost may break up the tough sod, in order that there may be close connection between the land turned by the plow and the soil below before any great demand can be made by the plant for moisture. This is the reason why the farmer in the belt of scant rainfall uses the subsoil packer. He wants to restore the capillary action which the plow has disturbed. It is also the reason why the gardener doesn't use any coarse manure and prefers commercial fertilizers, because he does not wish to disturb this source of water supply. So much for all seed beds.

Provided the plowing has been properly done, and at the proper season, there is not much difficulty in preparing a seed bed for corn. In fact, the deep cultivation which most farmers give their corn at the first plowing in itself helps to settle the seed bed firmly at the bottom. If the land has been plowed five or six inches deep and this deep cultivation is but three or four inches deep, necessarily the lower two inches must be pressed down more firmly upon the plow pan or the upper portion of the soil that is left unturned. The subsequent cultivations have the same effect but in a less degree.

The main thing to be avoided in turning over cornstalks or stubble is to avoid the turning over large lumps, something which is very liable to happen on heavy soils in the spring of the year, particularly in a dry time, unless the farmer first discs his corn stubble or his oats stubble and thus prepares a mulch of dry dirt on top. This mulch of dry dirt shuts off evaporation and allows the water from below to rise up by capillary action, thus dissolving any lumps that may have been formed, and prevents the formation of hard lumps or clods.

To understand exactly what we mean, let any farmer go out into a piece of heavy land that has been in corn last year and notice when a dry southwest wind is blowing how rapidly these heavy soils crack open. These cracks are the result of the evaporation of the moisture into the thirsty air from the crusted surface, causing, necessarily, a shrinkage and pulling together of the soil particles, making large cracks or checks all through the soil. These cracks mark the outlines of the clod which is in the course of formation. When the plow turns it over still further evaporation occurs, the clod becomes harder and harder; and hence we have often seen on this kind of soil pieces of land that seemed to be merely a pile of clods, which can not very readily be crushed until thoroughly soaked up with rain and then cultivated when they are beginning to dry out.

This is the reason why we have urged disking these lands in order to form a dust mulch and to prevent clods from forming. When this dust mulch is turned under it fits in closely on the unplowed surface or the upper part of the subsoil; in other words, the bottom of the preceding furrow; and there being no clod formation, it becomes quite easy to prepare the proper seed bed. Then with deep cultivation to begin with and a continuance of the dust mulch during the latter part of the season, you have not merely a rapidly improving seed bed, but the greatest possible supply of moisture in case there should be a shortage of rainfall in July, August, or early September.

The crop of corn this year will depend on the amount of plant food with which the soil is stored, the physical condition on which it is found at the time the corn is planted and during its period of cultivation and subsequent growth, and the units of heat, and the amount of sunshine which the crop receives during its lifetime. This year there will be many a field of only moderately fertile land farmed in accordance with the principles above outlined that will yield a very much larger crop than land of much superior fertility which is farmed carelessly and without any regard to these fundamental laws that govern the movement of water in the soil, the development of the root system; and the maturity of the crop.

Some of our readers may say that this is book farming. So it is; but book farming is simply recording the experience of farmers for centuries past under similar conditions, and telling the reasons why. That is book farming and scientific farming. Book farming is simply the statement of established facts, and scientific farming is simply good, common sense farming,.or obedience to the laws governing the development of vegetable life. No matter what he calls it, the man who studies and obeys these fundamental laws will win, and will have the satisfaction of getting the largest crop possible during the season; and the man who sneers at or disregards these laws, considering his business one of pure luck or main strength and awkwardness, will complain of his luck, or of the season, or of the administration.

Get your seed bed right, get the right kind of corn—corn adapted to your locality—get it in at the right time, cultivate it right, and you may not have a hundred bushels to the acre, or even seventy-five, but you will get all that is possible during the season, all for which you are furnished with the proper raw material.

## TAME GRASSES: BEST METHODS OF PRODUCING AND HARVESTING.

*John Krell, Before the Madison County Farmer's Institute.*

There are few kinds of tame grasses with which the people of Iowa, or Madison county have to deal. Therefore the grasses which we expect to talk about are timothy and clover. We might speak of the different kinds of clover which are red, mammoth, alsike and alfalfa.

Alfalfa of course is in its experimental stage and we are not prepared to say very much about it. I believe though, it could be raised in this State if sown on the right kind of ground. The grouud should be of a deep rich loam, and of a sandy nature on top. Located so the roots could reach permanent moisture at not more than ten to fourteen feet in depth; also should be well drained to prevent the water from lying on it in winter or any length of time in the summer. Seed that is sown in this State should be procured from some place where it was not raised by irrigation. The Grim Alfalfa grown in Minnesota probably would be the best to sow in this State. The seed bed should be thoroughly prepared as for garden culture. After which sow the seed in quantity about the same as other clover, but without any nurse crop. It should be mowed two or three times during the first year.

I would not advise anyone to sow more than an acre or so before they have proved its merit as a success. If once it could be raised in this State it would be a great benefit to the people in the way of feed for stock, as it is one of the staple crops and the wealth of the arid countries in the West.

Alsike clover is not grown very extensively but it is an excellent grass for wet lands and especially if the land is rich, as it stands the wet better than the red and mammoth and does not grow so rank and coarse on rich ground. Therefore I think on sloughs and wet land the best hay would be produced by sowing about five pounds of Alsike clover and ten pounds timothy, being careful to select good, clean seed.

Mammoth clover is especially adapted to thin and worn out lands. Hence if sown with timothy on thin land it makes one of the best hay crops we can raise, as it matures about the same time timothy ripens. But mammouth clover should not be sown on rich land if wanted for a hay crop, as it grows too rank and coarse. Sometimes the stalks reach three to five feet in length. Then in a wet season it falls down and turns black and slimy, which of course would not be very desirable for hay, as cattle would reject the stems and there would be a great deal of waste. But horses of course would eat the stems up quite clean and often eat that which the cattle would reject. How well it is eaten by stock would probably be due to just how much the stock was fed, as you can starve a brute to eat almost anything. The object, though, is to get stock to eat enough to put on the flesh and good hay creates an appetite.

We are probably more familiar with the common red clover, than we are with the clover before mentioned, as most farmers have learned its value for building up the land.

Red clover with timothy forms the major part of the hay crop in Madison county, for it is better adapted to the rich lands than any of the other grasses named, and does not grow so coarse and rank as the Mammoth, hence it makes fine hay from rich land. In a great many seasons the farmer can reap two crops of hay from the red clover, one in June and another in the fall, or if the season has not been too wet he may reap a valuable seed crop.

Now, in seeding land for hay I would always sow timothy with Alsike, Mammoth or red clover just as the case may be, being governed always by the kind of land to be seeded.

I believe that in most seasons there should be sown three quarts of clover and five quarts of timothy to the acre, but in a dry season it might be well to sow four quarts of clover and eight quarts of timothy on an acre. However, I have never failed to get a stand from proportion of three to five quarts.

The time and the way the seed is put in the ground may have a great deal to do with the kind of a stand secured I think the seed should be sown as early as possible in the spring, so the seed will have plenty of moisture to germinate. By being sown early it will have a chance to get well rooted before the hot weather sets in and will be less affected by the heat. The seed should be well put in the ground especially if the season is very dry, but if there is plenty of moisture in the ground, the nurse crop might be worked in first, then before harrowing sow the grass seed, after which harrow ground twice. A good way if one could do so would be to sow timothy in the fall with rye or fall wheat. Then in the spring just after the frost has gone out of the ground sow the clover and if the rye or wheat was drilled harrow with a smothing harrow. Harrowing might be beneficial to the small grain as it would be equal to a cultivation.

Barley or wheat makes a better nurse crop for spring seeding than oats, as it is not so apt to lodge and smother out the grass. The earlier the grain can be cut the better the clover will stand the hot weather, so barley would really be better than either wheat or oats unless it was a very early variety of oats.

The time clover is put up for hay has a great deal to do with the quality. The proper time for cutting clover to make first class hay is when one-third of the heads have turned brown. At this time clover contains from seventy to eighty per cent of water. When cut and ready to go into the barn it should not contain more than twenty-five to thirty per cent of water. Anything over forty per cent is dangerous and might form spontaneous combustion. Therefore the problem is to get rid of this extra moisture, which is thirty or forty per cent of its weight. If we have the right kind of weather it is not a difficult job, but if the weather is brittle and the atmosphere is ladened with moisture it is not an easy job, even under the most favorable conditions, for if clover is allowed to lie in a heavy swath it is but a few hours until the leaves on top turn brown or black, while the stalk is full of sap and the under leaves are quite green. The best thing to do then, if the clover is at all heavy on the ground, is to stir it with a tedder or side delivery hayrake, in order that the air may pass through the clover easily and pump the moisture from the stalk out through the leaves. Then just as soon as there can be no moisture twisted out of the stalk get the hay into some barn or hayshed. For every load put under shelter is saved, and if stacked out is likely to spoil.

Timothy should be cut when in second bloom or rather, just going out of bloom. As at this time it has more nutriment than at any other time. If cut sooner it will make dusty hay, and if cut after too ripe it becomes too woody and dry to get best results from feeding. After the grass is well cured the best way to put up hay is by the use of a hay loader in the field and use of a hayfork at the barn; or if stacked in field, a cable might be used, providing you have men on the stack that understand their business.

About the best way to get hay up though is to work while the sun shines and work fast.

## SPONTANEOUS COMBUSTION OF CLOVER HAY.

*Wallaces' Farmer.*

By the time this reaches our readers in the central part of our territory many of them will be busily engaged in putting up clover hay. In the southern part of our district they are at it now, and so are our alfalfa readers in the western part of our territory. It is therefore timely to point out a possible danger from neglect or haste and bad judgment in putting hay in the stack, especially in large haysheds or big bays in barns.

The fact that clover and alfalfa and sometimes sorghum or shredded fodder will take fire by spontaneous combustion is too well established to admit of any possible doubt. Scientists for a long time hooted at the proposition, but they have been obliged to yield to the stubborn, stern logic of actual fact. The sight of a haystack on fire where no other means of taking fire are present is convincing proof. Even more convincing proof is found in the middle of a large bay or shed or stack, in the blackened and thoroughly charred remains of what once was hay, in which combustion occurred without flame. Cases of this kind are by no means infrequent.

The cause of it is somewhat obscure. There can be no combustion, with or without flame, until the moisture is completely exhausted, not merely the moisture over twelve or fifteen per cent which thoroughly cured good hay carriers even when quite dry, but all the moisture, called fixed because it can not be removed without unnatural heat. The exhaustion of this moisture is due to heating and fermentation, and that is due to fungus carried in on the hay, and particularly on clover.

This extreme degree of heat does not arise unless the hay is stored in large quantities. It arises more frequently in some years than others and more in some sections in the same year than others, due to the greater abundance of the fungus which is capable of developing this extreme degree of heat.

The remedy is proper curing before the hay is stored in these large bays or stacks. Just how to determine what is proper curing is something which can not very well be put on paper. Ordinarily when a farmer of ordinary muscle takes a wisp of hay and twists it as hard as he can and finds no moisture on the outside it is ready to go into the barn and can safely be stored. There are, however, atmospheric conditions which warn a man to be very cautious. Every farmer knows that clover takes up moisture very rapidly from the atmosphere. He has noticed how much heavier the hay handles when he takes in the last load in the evening in muggy weather. The hay lying loose in the field or in the windrow is then taking up moisture very rapidly. It would have been in first-class shape to have gone in the barn at three or four o'clock, but may be altogether too damp even on an apparently dry day if not taken in till sundown.

Again, much depends on the way the hay is handled. If it is very heavy and hence lies thick on the ground, in other words, in a heavy swath, and the day has been hot and muggy, you will frequently find the under side quite green, while the upper part of the swath may in fact be sunburned and seriously damaged by excessive heat. Hence the necessity of keeping hay in the field that is not intended to be cocked as loose as possible, so as to allow the freest circulation of air. Every observant farmer will notice that the hay lying on top of the swath on a wet day will be quite green and sappy, while the leaf structure is dead. It is almost impossible to get the water out of the stalk afterwards.

Spontaneous combustion frequently occurs from putting hay in too green or insufficiently cured, or if one man pitches and allows it to drop from the fork into the middle of the mow. It is just at this point that the craters form, from which hot air continually rises, and where the combustion starts.

It is well on general principles for the farmer to watch closely every morning what is going on in his barn or hay shed. He should not trust this to his boys or hired hands, but go and look at it himself. If he gets up in the morning and goes out before breakfast and finds the hay on top of his mow or shed quite wet, especially where the fork drops the hay, it is an indication that he had better be a little careful. What is going on there? The air in the morning is a little cool, and the moisture is being condensed. This shows he has put in some hay too green. If he has straw handy, he had better put on a load or two of that, so as to absorb this moisture before he puts any more hay on. If he don't, this will again be driven up through. In other words, it simply increases the moisture in the hay that he puts on top, and becomes an element of danger.

Two things can be done to advantage: Put a man in the barn, and before the hay is dropped let him take a fork and pitch it to the farther side, distributing it evenly over the barn and thus relieving the heavy pressure along the center. If a load is put in in the evening, throw that to the outside. These two simple measures will do much to lessen the danger from spontaneous combustion. We hesitate to say what should be done when excessive heat sets up in the hay mow.

If you keep an iron rod handy and shove it into the mow and on pulling it out it is not too hot to hold comfortably in the hand there is not, ordinarily, much danger; but if it comes out so hot that you can scarcely hold it, there is danger. If the danger is scented early enough it may be well to cut down through the hay and thus give an opportunity for this surplus moisture to escape; but if craters have been formed and hot air rises (or, we should rather say, gas, and slightly different in color from common air), then to do anything with it means that the whole thing may take fire. We have known cases where farmers feared that combustion would take place and undertook to take the hay out, with the result that it took fire even in hauling it to the field. When this occurs it is usually too late to do anything.

We mention all this out of perhaps too abundant caution; but if it will lead to farmers keeping their hay as loose as possible in the field, avoiding wet bunches, and where these are unavoidable throwing them to the outside, and avoiding putting hay brought late in the evening in the center of the barn, then this article will have served its purpose.

Putting up clover or alfalfa hay is a fine art in which comparatively few excel. It can not be taught on paper. It must be learned by actual experience in the field, and when a man has a large hay crop on hand he needs to have some of the qualifications of a first-class general and weather prophet besides, in order to get the very best results possible.

## USE AND ABUSE OF PASTURES.

*Farmers' Review.*

Looking over the pastures on many farms it will be observed that there are numerous heavy growths in clumps over the surface. These are simply manured spots and they should teach the owners a lesson. The green places, heavily covered with rank grass, tell where the droppings of pastured animals have fallen and fertilized the soil. They tell what might be the condition of the entire field were the soil similarly rich everywhere. They tell another story, too. The fact that certain spots are luxuriantly clad means as a rule that the bulk of the pasture has been barebitten. This is a common sin amongst us. After the long winter, when dry feed has been used in tremendous quantities and the animals are suffering for succulent food, there is great temptation in the green supplies of the pasture and the life is forthwith eaten out of the field. In many instances the cattle are turned on too early and the growth is checked; in more instances they are allowed to eat too closely and when the summer sun strikes hotly, the roots, unsheltered by heavy growth, are dried out and die. The pasture so treated becomes brown and bare, and next year the growth is thin except upon the parts that have been mulched by droppings. Again, where better care is taken of the pasture in spring and early summer, the cattle are allowed to eat the new green growths too bare in the fall after refreshing rains have fallen. The consequence is that the grass roots are illy protected for winter and besides this there is no grass for winter use. On the contrary, where the fall growth is allowed to become long and cures in that condition at the first breath of winter, roots are duly protected and cattle and horses or other animals afforded a wonderfully useful bite on fine days in winter.

There is a wrong impression prevalent that grass costs nothing. On the contrary, it is often extremely dear food, judged from the appearance of many pastures. Short growths of grass tell that the field has been robbed year after year, for animals remove plant food with every bite of grass they take. Milk, meat, wool, pork—the materials for frame building and repair of waste tissues—all of these things are derived from the grass. The field gives of its store abundantly at first, but as the treasury is drawn upon year after year, the supplies lessen and bankruptcy ensues. The soil of such fields is no longer able to raise a normal crop of grass—that is shown by the rank growth on the manured spots—and it may be taken for granted that the grass grown can no longer fully nourish the animals eating it. Fewer animals have to be turned on the pasture, but they merely retard final bankruptcy. What is needed is a rest for the field and a few square meals for the hungry land. We should not expect to go on year after year borrowing from the soil and returning nothing. We are doing this every year on most farms. It is time to wake up to sensible methods of management, and the pasture lands need them most. It is necessary to understand that an acre of good grass will fully maintain only a certain, fixed number of each variety of animal; that turning more than this number upon a pasture will surely weaken it, and that for what is removed something must be returned, else poverty will surely follow. Grass can not be barebitten with impunity. Grass roots need protection; grass hearts must be conserved; a winter mulch of grass is necessary, for snow does not always make up for man's delinquencies. Then, too, the pasture tends to become hide-bound like an unhealthy horse. This tells of lack of air in the soil, of lack of circulation, of insufficient drainage and of sourness. The air must be made to circulate freely. That is done by allowing water to enter and percolate. It means an adequate system of under-drainage and in many instances a top-dressing of lime. All things considered, the pasture area deserves and requires as much attention and study as any area on the farm and generally receives far less. When all of the grass is of like growth and color, when manure droppings make no appreciable difference in growth, then the soil of the pasture is in good heart and animals will thrive upon its grass. In short, the pasture area should be enriched and attended to as carefully as any other part of the farm, and the prevailing abuses to which it is exposed should be discontinued.

## HOW TO RID LAND OF COCKLEBURS.

*Wallaces' Farmer.*

The ownership of land in the west is gradually changing from the bad farmers to the better class. Bad farming as in the case of farms that have been rented for a number of years to a poor class of renters, means land impoverished, it means the presence of a luxuriant growth of bad weeds such as cockleburs, velvet weed, quack grass, Canada thistle, squirrel-tail grass, and the rest of the foul brood. Sooner or later these lands must be sold and will pass into the hands of the better class of farmers who are always more or less land hungry. We regard a farm well seeded with velvet weed or cockleburs as damaged not less than ten dollars per acre. We had rather, in fact, give seventy-five dollars per acre for a clean farm than give sixty dollars per acre for a farm defiled with the above weeds. It is cheaper in the end.

Fortunately the methods which tend to build up a farm will incidentally tend to keep down the weeds. Take the case of cockleburs: The cocklebur not only interferes with the growth of crops, but it actually seems to poison the land, and should be gotten rid of at all hazards. The theory of ridding the farm of cockleburs is one of the simplest and easiest: ''Sprout them, and then kill them.'' The methods of applying the theory are different with different crops.

A large share of these cocklebur farms should be sown down as soon as possible to clover and timothy and put under a regular rotation. It is not difficult to handle the cockleburs on that class of land. Sow it down to spring wheat, oats or barley, giving the seed bed the most thorough cultivation possible. If, for example, it is largely in corn, as most of these farms are, the first thing to do is to break the cornstalks, then thoroughly disk the land across the corn rows. This will break up the crust, conserve moisture, and level the land so as to make mowing easier the next year. We would not aim to have a very thick stand of grain but would give a heavy seeding of clover and timothy. The cocklebur requires about the same amount of heat to germinate it that corn does. Hence, the preparation of the soil will not germinate the cockleburs. These will grow, of course, during the latter part of May and the first of June, but they will not make much headway until after the grain crop is removed, then they will be in abundant evidence. Let them alone until they fairly begin to blossom and mow before the seeds are sufficiently matured to germinate. If a good stand of clover and timothy is secured, the subsequent mowing of these will kill the few cockleburs that will appear before they can form germinating seeds.

The most difficult thing is to handle them in the cornfield. The cockleburs will begin to sprout by the time the corn is up. Fields of this kind should not be limited to three plowings, but be cultivated just as long as it is possible, and there are circumstances where it is advisable to cultivate the corn when it is in full tassel, using, of course, a single horse. Then hand pulling must be resorted to. Even after the corn is laid by cockleburs will grow, and there is no way to do but to go through once or twice and carefully pull out overy cocklebur by hand. If any should be mised they should be gone through and pulled out of the corn before the seeds fall off, and burned.

If they appear in the pasture the same method must be adopted. This involves work, care, and attention, but is the only way of which we know that will rid the farm of this weed which persistently poisons the land.

The velvet weed is a different proposition. It sprouts early, and in a badly polluted field will come up with the corn and even before it. Thorough and careful cultivation of the corn will keep it down, and if there is a full stand of corn those that come up later will not make a very rapid growth and the frost will likely catch them before they mature seeds. However, if the farm is badly polluted with this weed a man will need to live long if he ever entirely gets rid of it. The seeds will lie in the ground for at least twenty years and will then grow whenever the opportunity is offered.

When the farm is put down to clover, the owner must expect another crop of cockleburs and velvet weed whenever it is again plowed up and put in corn, but in a few years, following the method above suggested, the cockleburs may be entirely eradicated. The farmer, however, will need to keep constant watch provided his neighbors are careless. The introduction of these weeds are the price we pay for not doing our best to educate all our neighbors in the direction of good farming.

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## WEEDS.

*W. H. Lewis, Before the Madison County Farmers' Institute.*

''Cursed is the ground for thy sake; thorns also and thistles shall it bring forth to thee.''

This seems to be the oldest mention of weeds and has by many been regarded as accounting for their origin. While this may or may not be true, it is very evident that in some manner weeds have originated, that they have been universally disseminated, and that they are with us now in unwelcome abundance. No effort will be made in this paper to enumerate or to describe all troublesome weeds, or even those most numerous in Iowa. The topic of weeds in general is too large for an occassion like the present.

The question, what is a weed? First meets us and has I think been well defined as, ''*a plant out of its proper place*.'' We have all seen examples that plainly illustrate the definition, such for instance as hemp growing in fertile spots by the roadside or wheat and rye growing in a field of strawberries; so it may be safe to say that any plant growing in a place where it is not wanted is in that place a weed.

Weeds being with us, a little knowledge of the methods by which they may increase, or be distributed ought to be useful to us. The method of increase is I think in all cases by seed, and in the case of biennial or perennial plants by the spread of the roots also.

The seeds are distributed in many ways of which one of the most potent is the wind. Light, downy, or winged seeds are very readily carried by the wind and to a great distance, and even quite solid heavy seeds are swept up by our powerful wintry winds from exposed and bare surfaces to that of the snow upon which they are driven no one knows how far.

Water is another large factor in the problem. The many channels that are indispensable as means for removing surplus water after heavy rains—the dead furrows, open drains at borders of the field or the farm, the draws that traverse our prairies, the rivers, all of these places are the pathway of streams of water and the water is a common carrier of seeds, and a common carrier that does not recognize the restrictions of the interstate commerce law or the regulations of any of the commissions or committees or associations that have been provided or attempts to regulate the acts of common carriers. Vehicles upon the road are active distributors. A lump of mud dropped from the carriage of a visiting friend may contain a seed that introduces to your farm a weed that you may never be able to exterminate.

The telephone is an active and efficient distributor of news and it is to be an active and powerful agency in the increase and distribution of weeds. There are in this county four hundred and sixty-three miles of telephone. This means that there are four hundred and sixty-three miles of a strip not less than six feet wide along our roads that will be given up to the production and distribution of weeds. It can not be plowed, the mowing machine can not reach it, it is not likely to be cut with a hoe or mowed with a scythe, and the results will be a fearful increase in the noxious weeds in the country. The telephone companies have been allowed to take possession of our roads without restriction or control and many unpleasant things are already in sight as a result of it. Packing material has brought some very bad weeds to us from distant parts of the world, and imported seeds and plant have brought to us seeds and insects that go far to offset any benefits we may have derived from their introduction.

There may be other means of introduction and distribution of weeds, but those enumerated are surely enough. Now what shall we do to cambat this, threatening and powerful evil? It was once said of a different matter, ''All things are lawful, but all things are not expedient.'' It is expedient, however, to prevent the production of seed, and this is probably one of the most effective means of control, and really is the entire means of control. Cultivation of our crops seems with most of us the removal of the weeds, and the succession of weeds is such that their removal occupies the entire season. Early in the season tools having numerous teeth are most effective, the young plants having weak hold upon the ground are easily dislodged and being so small as to retain no reserve of moisture, are almost instantly killed by the wind and sun, so we find that a harrow with its many tooth points and its wide sweep is very effective. Later in the season the case is different and a harrow among larger weeds is an excellent illustration of the Darwinian theory of the survival of the fittest, as it destroys only the belated weaklings and loosens the soil so as to stimulate a more vigorous growth of the stronger ones, while the removal of the weak ones makes the struggle of the stronger ones remaining less arduous, and fits them for producing a more abundant and productive crop of seeds. We find later in the season that the weeds that have escaped death by the harrow or other similar toothed tools need a different class of tools to destroy them. We must have something that digs deeper and has a wider blade. A weed that has a deep root takes such a hold upon the ground that it holds by its tip while its upper part is pushed aside by the passing cultivator tooth, so it comes to pass that while, as a matter of theory, a harrow or a weeder used so early that no weed has developed more than its first pair of leaves, and successively used as often as later germinating seeds reach the same stage, will keep the ground perfectly free from weeds, is found to be not quite true that inequalities of surface and other causes protect a part of the weeds and we soon find a formidable crop of very vigorous weeds, such as no tool of that class can destroy. Plainly, then, a tool making a deeper and wider cut must be used. Pointed shovels ought to be avoided. They take hold well but usually cut only a part of their width and at the end of the strip supposed to be covered with the travel of the blade, will be found a line of weeds not cut and so lightly covered that their heads are soon out and they are growing more vigorously than ever. A tool whose blades are of such a united breadth as to exactly cover the ground will usually fail to take all of the weeds because at the edge of the shovel the weeds will often move aside and escape, as we all know it is impossible to maintain a keen cutting edge upon such tools. I have found in my work that very wide blades are most effective for this later work with larger weeds and even then they must be so set that the cut of the back shovel overlaps the cut of the front one. With all this, however, many weeds escape and must be dealt with directly and individually by that ancient, much despised, but effective tool, the hoe. Progressive men, in the spring, plan to keep their crops clean with such horse tools as they can ride upon, but autumn and the succeeding year make it very evident that too many weeds have escaped destruction. Hand work to some extent is a necessity which can not be escaped, but it can be made much less by careful and intelligent use of horse tools.

Beyond all this it still remains that different weeds must have different treatment. A smartweed uprooted with a tip of a branch covered with dirt will take new root and make an enormous crop of seed, a single plant making seed enough to abundantly seed a quarter of an acre, so be sure the smartweed is all on top of the ground and in full sunshine if possible, and it will require several days even of such exposure to put it beyond power of recovery. A purslane pulled up and laid on top of the ground affords an interesting object of study. As it feels the wind and sun it wilts, next it reduces its exposed surface by dropping off its leaves, meanwhile trying to get a hold upon the ground by movements of its branches to effect a contact· Failing so far it drops its sprays, later, if · necessary, its smaller branches, next larger branches and so on constantly reducing its exposed evaporating surface until the evaporation is not greater than absorption from the dew and the earth supplies, then roots push out from the part of stem in contact with the earth and growth begins, and soon the struggling plant has regained what it had lost in its valiant struggle for life.

After all these things, after the harrows, the cultivators and the hoes have done their work, there are weeds in places these tools never reach which must have attention, and a scythe or some similar tool seems to be the only thing for them. Use the mowing machine where you can and use it often and there are yet weeds left where you must use a scythe.

When it comes to this tool you must follow the example set by old Father Time, viz: have a good scythe, keep it sharp and keep it in constant use. Weeds ripen seeds at such varying times that no date can be fixed where one cutting per year is sufficient. This was and is the strongest objection to the Iowa law compelling the cutting of weeds along the roadside. At the date fixed many very bad weeds had already ripened their crop of seeds and yet others had ample time to grow and ripen a crop after the cutting had been done. Frequently repeated cuttings must be made to prevent the production of seeds. Do not forget that the single stroke of a scythe at the proper time and place will be more effective to control the increase of weeds than hours or even days of hard work next year. Never loose sight of the necessity of cutting these weeds just before the earliest of its seeds have reached a degree of ripeness that makes it possible for them to grow and produce more weeds.

If by any chance one of these troublesome plants escapes you and is found to have ripened seed upon it, the only way then left open is to pull it up carefully and without dropping any of its seed carry it to a place where it can be burned.

For several years past I have had a place expressly for burning these late weeds and it has been a yearly surprise to me, how soon I got a large pile, and when that pile was burned how soon another equally large pile stood in its place.

It will be said in reply to what I have written, "It is all very well to write such things but no one does or can do them."

To this I reply that you can, and must, do all this and more. Present conditions are such that every tiller of the soil must take up the fight with the weeds, and the result of the battle determines whether or not you stay on your farm. It amounts to a struggle for the possession of the land and if the weeds win you will have to move off.

As to the further question of exposure from careless neighbors I am really unable to say much. I have had a crop of velvet weeds grow to maturity with only a wire fence to protect me from their seed and the extra expense caused by such exposure has been as great as the taxes I pay to the county treasurer, yet to lodge a power anywhere to control and prevent such things, seems impossible under our present ideas of proper government. The Socialistic panacea for all ills, viz: Governmental ownership and control might do it, but it is doubtful at best, and it is to be hoped it may never be tried. So the question, "How may a man protect himself from his thriftless neighbor," is left with the interrogation point at its end a little larger and more prominent than before.

## PRESERVATION OF SOIL FERTILITY.

*Lewis McDowell, Route No. 2, Forest City, Iowa, Before the Buena Vista County Farmers' Institute.*

In its natural state this land was covered with grass. When we broke the sod and began to farm we found the soil filled with grass roots and partially decayed vegetable matter which made the land mellow and easy to work. By growing grain year after year we have changed the condition of the soil. In time the vegetable matter is completely decayed and there is nothing to hold the soil grains apart. When it rains they run together like mortar. When we plow it breaks up into chunks. After a few days of dry weather we have a mass of hard dry lumps instead of the nice mellow, moist seed bed we had when the land was new. We have changed the condition of the soil. If we could restore these conditions we could increase our yield of grain.

My observation and experience leads me to believe that we can improve on the natural capacity of the soil to produce corn by a proper rotation of crops whereby we will grow clover once in three or four years to be followed by corn. I have watched the growing of clover for over twenty years but I gained my first accurate knowledge of the value of clover in 1890.

W. A. Crowley of Ida county, Iowa, had sixty acres of clover from which he cut more than two tons of hay per acre. Then he cut a seed crop the same year, of three bushels per acre. Mr. Crowley told me the hay was sufficient to pay the rent on the land at two dollars and fifty cents per acre and all expenses of harvesting hay and seed crop as well as expense of threshing seed. He sold the seed for five dollars per bushel or fifteen dollars per acre, which was profit.

The following year they planted this land to corn. The yield was over sixty bushels per acre while corn on the same farm on land that never was clovered, but otherwise equally as good, produced fifty bushels per acre.

In 1891 I bought one hundred and sixty acres of land in Cherokee county, it was an old blue grass pasture. It had been used for pasture from the earliest settlement of the county, and had never been plowed. I broke it up and raised flax the first year, sowed wheat the second year. In one field of thirty acres I sowed twelve acres to clover. The next year I cut one crop of hay. The second crop went to seed and I pastured it off. Did the same the following year, then plowed it and planted corn. During this time the remainder of the field had grown one crop of wheat, one crop of corn and one of oats. The following year I planted the whole field to corn which made the sixth crop since it was broken. The clover had been on the north end of the field. I planted north and south and cultivated all alike. When I husked the corn I found the corn where the clover had grown would make ten bushels per acre more than the rest of the field. Ears were larger and better developed. The whole field averaged sixty-five bushels. This would indicate that even new land, naturally rich is benefited by growing clover.

I bought the farm where I now reside and planted my first crop in 1902. There was one field of thirty acres which I sowed to oats; half of it I sowed to clover in 1903. I cut two crops of hay, then plowed in November and planted the whole field of thirty acres to corn in 1904. The corn on the clover sod was easier to cultivate, was cleaner of weeds, and produced more than twice as much corn as the other half of the field. This land had been farmed for over thirty years without ever having grown any clover.

In order to preserve the fertility of the soil we must feed all our grain, hay, straw, and fodder on the farm and haul out all the manure as fast as made and spread on the land.

With land at present prices and a prospect that it will reach still higher value we can not hope to realize a reasonable interest on our investment in land by feeding our crops to scrub stock. We should not try to see how many head of stock we can keep on each farm and not starve any of them to death. We should breed the best stock possible to grow on our land and keep them growing till ready to sell. The aim should not be to produce the greatest number of stock, but the greatest number of dollars' worth. We are short on good beef cattle and good draft horses, both of which we should be able to produce at a profit if we breed right and feed right, and while growing stock that will make a profit we can preserve or increase the fertility of the soil.

## GROWING WATERMELONS.

*Chicago Drovers' Journal.*

While a watermelon is essentially a Southern product, it is still popular in the North, and is only handicapped by the troubles that many farmers encounter in growing it. That the watermelon can be successfully grown in our northern climate has been amply demonstrated by hundreds of successful experiments in every community. However, there are plenty of farmers who, though they like watermelons and would grow them if they were able, have simply failed. In their own words, they are not "lucky" with the watermelon. In fact, the difficulty is that they have overlooked some essential, vital to success with the crop.

Like all plants taken from a warmer clime, the watermelon vine is very sensitive to cold. Planted too early the cold soil will hamper the germination of the seed so that possibly it will entirely decay. Again, if the seed should start during a few days of warm weather and then the weather turns cold it is apt to be hurt with the chill of early season if it is not nipped by the frost. Observers have noted that in the fall the watermelon vine is one of the first things that show the effects of cool weather. There are few things that will show the autumn frost sooner, even though the vine is matured and has yielded its season's product. Planting is generally advised for some time during the latter part of the month of May, though it is best if the ground has been gotten ready some time before and until seeding kept in a good, vigorous tilth.

A sandy loam soil is the best for the watermelon. We have never known of a case where a farm with heavy clay land has been successful even in a small way with watermelon growing. A light soil is best. If, in addition to this, it is rich in nitrogen, containing liberal amounts of humus in a well decayed state, it is still better fitted for growing the crop.

Manuring in the fall and early spring plowing are desirable. One gives a fertility to the soil that is essential for good melons, while the latter paves the way for three or four weeks of cultivation before the time for planting the seed. Worked land, even though it is not touched but once a week, means that thousands of weed seeds will sprout and the shoots be ultimately killed before time for planting the watermelon seeds. This fact is important in that it is far easier to kill weeds before seeding than it is after the hills are made and the seeds are in the ground. In Farmers' Bulletin No. 193, under "Watermelons in the North," attention is called to some work that has been done in one of the eastern stations with watermelon growing. This experimenter has secured a notable success with the watermelon. Some hints that will be useful are summed up in the following.

"The hills are planted ten feet apart each way. They are dug eight to ten inches deep, eighteen to twenty-four inches in diameter, and filled two-thirds full with rich, well-rotted manure. A good stable manure that has been piled up over winter and thoroughly chopped over is preferred. To this is added a small quantity of hen manure and sand.

"Enough soil is drawn on this and thoroughly mixed with the compost to fill the hill nearly full. A half pint of unleached wood ashes or fine hen manure or a small handful of phosphates is sprinkled over the top soil and well mixed with it, after which enough soil is added to make the hill level with the top of the ground. The hill is now ready for the seed. The seed should be from a reliable source. Ten or twelve seeds should be planted in a circle, about one foot in diameter, in the center of each hill; then draw on from one-half to two-thirds of an inch of fresh, moist soil, and press it down firmly with the hoe; also, add lightly from one-fourth to one-half inch of loose dirt, to act as a mulch. When the seeds germinate, and as soon as the plants begin to run or after all danger from insects is past, thin to two or three plants, leaving the thriftiest in each hill.

''Cultivation is begun as soon as the plants are well up. It is made deep and thorough and as often as necessary to keep down the weeds. Especial pains are taken to loosen the soil about the plants after rains. When the vines begin to run more shallow cultivation is practiced. The vines at this time are very tender, and great care is taken not to step on them or injure them in any way. Should strong winds prevail and the vines be blown about, a little loose dirt is drawn over them at intervals of three or four feet. This serves to hold them in place until the melons get large enough to hold them.

''Should the small striped cucumber beetles appear about the time the plants come up, they may be driven away by lightly sprinkling the plants with some such substance as tobacco dust, ashes, ground bone, plaster or lime. The beetles are likely to appear suddenly, and if not taken in hand at once may destroy the entire field.''

Save in a few isolated cases, all of the melon raising in the north will be largely done by men who are in the business merely for their own satisfaction in having the melon for home consumption. There are a few who raise melons for market, but these men make a study of the matter and handle the melon as a regular crop. With the average farmer the case is different. With him the melon is a side issue and the ground is plowed, worked and planted at some time convenient with other work. The result is that the melon is shifted off to one side, which, we believe, is one of the most important reasons why so many thousands of farmers have utterly failed with the crop.

# HORTICULTURE.

## SMALL FRUIT FOR THE FARMERS' TABLE AND ITS CULTIVATION.

*Isaac Johnson, West Union, Iowa, Before Winneshiek County Farmers' Institute.*

In giving me this subject it must be understood that this means a garden for the practical farmers. And by a good collection of varieties and good care, can have plenty of fruit on the table the year round.

This farmer's fruit garden I want to select near your house where the wife and children can see it. You want it ten rods long and five rods wide. The ground can not be too rich or too finely pulverized. To prepare the ground deep fall plowing and replowing in the spring is far better than only one plowing in the spring. After the ground has been pulverized and thoroughly harrowed; then mark out six rows four feet apart for strawberries. Have them planted twenty inches in the row. In the first row I would plant one hundred Crescent. In the second row plant one hundred Bederwood, in the third and fourth rows plant Crescent, in the fifth row plant Lovett, and in the sixth row I would plant Warfield. These four varieties of strawberries are selected out of hundreds of varieties, and for years have been thoroughly tested and tried and found perfectly hardy, good bearers of fine fruit for home use. We nearly all know that by fruit agents there have been varieties recommended to us far better than those I have named, and been selling at one dollar a plant, but my advice is, keep your money in your pocket until you know what you are buying. All strawberry plants are staminate or pistillate (male or female) and pistillate varieties must have staminate varieties planted side by side. Many have failed to raise good crops because they do not understand this law of nature. You will notice that in the first row are Crescent. In the third and fourth rows are Crescent also. In the sixth row are Warfield. Those are pistillates. In the second row are Bederwood and in the fifth row are Lovett.

Those are staminate varieties. In planting out strawberries you should always use new strong plants for setting. Never let the roots be exposed to sun or wind. Let one man insert a spade in the ground to a depth of six inches, and lean forward to open a hole, while a man or boy takes the plants and spreads the roots out fan shape and place in the hole. Have the dirt well packed about the roots just even with the top of the ground, neither above or below. I think the best time for planting out strawberries is in the early spring. Not too early, but just as soon as the ground becomes warm and can be worked nicely. It should be so that the plants will begin to grow at once. The important part of raising strawberries is to keep the ground loose and free from weeds. This is very easy said, but not so easy done, but it must be done. Soon after planting I go over the rows with a two-horse, eight-shovel corn cultivator, and then go over the rows with a hoe every week, wet or dry. The runners should be trained to fill the space between the hills and half way to the middle of the row. When winter sets in and the ground is frozen so that it will bear up a team and wagon, cover with old straw, or still better, wild slough hay. When growth commences in the spring rake the mulch off the plants leaving it between the rows. It will keep down the weeds, hold the moisture, and keep the fruit clean when it rains. By following these directions you will succeed in having a good crop. The strawberry is the first fruit to reach the table in the spring and will last for about one month. They can be eaten three times a day and ever be grateful and tempting to the appetite. A plant of such general adaption, a fruit with such a fine flavor and so unusually relished ought to find its way a into every garden on the farm.

The next two rows I would plant raspberries. Mark out the rows six feet apart and plant them three feet apart in the row, and about six inches deep.

I would plant one row of Alder and one of Kansas. The raspberries must be cultivated and mulched with coarse manure. This will keep the ground moist and clean. When the new shoots are eighteen or twenty inches high pinch back. This will cause lateral branches to grow which in August or September should be set in the ground for new plants, and by so doing the canes are found not so liable to be injured by hard frost during the winter. The lateral should in the spring be cut back to fourteen or fifteen inches in length.

Now I would mark out two rows six feet apart for currants and gooseberries. Plant them three feet apart in the row. Of currants I would plant Red Dutch or Victoria. Of gooseberries plant the Downing. The currants and gooseberries must be cultivated and kept free from weeds. For the last few years we have been badly troubled with the currant worm. Those can easily be kept off by dissolving one ounce of White Hellebore in three gallons of water and apply with a sprinkler two or three times in the spring. This will generally keep them off.

Now my farmer friend this is your fruit garden of small fruit, and by taking good care of this garden you can have fresh fruit on the table for over two months, and if you buy sugar your good wife will can the berries and you will have plenty of fruit on the table the year round.

## WHY MANY FRUIT TREES HAVE BEEN UNPROFITABLE IN IOWA.

*Capt. R. P. Speer, Before the Black Hawk County Farmers' Institute.*

I have given special attention to the growing of fruit trees in nurseries and orchards in Black Hawk county since 1865, and I have tested carefully two hundred and thirty kinds of Russian apples; more than two hundred varieties of the most promising American apples, besides many kinds of pears, plums and cherries, etc.

Many years ago I was convinced by the best of evidence that three-fourths of the losses in Iowa orchards were caused by failure of trees to ripen in the fall before cold weather. The ripening of trees at the proper time in the fall is an important process which fruit growers in Iowa should understand.

When trees are ready to complete a summer's growth, they withdraw all of the sugar, starch, albuminoids and other nutritive substances from their leaves and other parts where growth is going on, and store them away to be used in starting growth in the following spring. The hardiness of fruit trees in a cold and changeable climate can be determined by their conditions or stages of ripeness after their leaves have been killed by heavy fall frosts. When trees are ripe, all of the carbohydrates (sugar, starch, etc.) which they contain, will be stored in granular form and lignified in their piths and medullary rays. The lignin is used principally by oaks and other trees to prevent their heart wood from rotting, when it is exposed to the weather, and during the ripening process it is used to prevent water from dissolving the grains of starch in ripe trees suddenly during the short spells of warm weather which occur in March and April frequently. Growth can not begin in ripe trees until the grains of starch in their piths are dissolved; but as they are well protected by lignin they can not dissolve, and growth can not begin until after ten or twelve days of continuous warm weather. But when trees do not ripen in the fall no granulated starch can be found in their piths; but sugar, ungranulated starch, etc., could be found in their leaves, ungranulated bark and sapwood. Very short spells of warm weather in March or April would be sufficient to start growth in unripe trees because the different kinds of assimilated plant food materials were left when growth was stopped by fall frosts in the right parts of such trees and in proper condition to cause growth as soon as the conditions of the weather would permit it.

During the ripening process all of the albuminoids in a tree are stored in concentrated form in its buds, where they are well protected by bud-scales, and in its sieve tubes outside of its cambium layer. The sieve tubes of trees are long fibrous vessels of the inner bark, perforated at many points, so that the slimy albuminoids can be forced out of them by pressure from above. Vegetable physiologists tell us that such perforated points on the sieve tubes are closed during their ripening process, to prevent water from coming in contact with the reserve albuminoids; but that they open again when growth begins and the weather becomes warm. But when trees do not ripen in the fall, the perforated points on the sieve tubes remain open during the following winter and albuminoids in a watery condition could be found at all points of growth in their bodies and limbs.

Numerous small, light-colored spots are noticeable on the bark of young branches of trees. They are small openings in the bark called cuticles, through which surplus aqueous vapor is discharged from the inside of trees, and through them carbonic acid and other gases are absorbed from the atmosphere to be used in causing growth. The cuticles are closed during the ripening process in the fall, but they open again after new growth has commenced during the following spring. But when trees do not ripen in the fall, their cuticles will remain open all winter and allow the escape of much necessary water. Very cold weather can not injure ripe apple trees, because they are well prepared to endure it. But there have been warm spells of weather frequently in March and April which started premature growth in unripe trees that were followed by very cold weather, which injured their cambium layers and caused sun-scald on their southwest sides.

I lost most of the one thousand four hundred apple trees which I planted in 1869 and 1870, before they were old enough to bear full crops of fruit because they could not obtain as much water from the soil as was necessary in very dry summers to enable them to complete their growth and ripen at the proper time in the fall. Frequently their leaves were killed by frosts when they were young, and I will now offer facts to prove why many of our fruit trees have been tender and unprofitable.

On the 20th day of March, 1879, I examined the different kind of trees in my orchard carefully with a knife, and I found that all of them were in excellent condition. But from the 21st to the 28th day of March the weather was very warm; on the 29th of March it was very cold and the ground was frozen to the depth of two inches. Then there was a sudden change in the weather, which was very warm for several days. On the 10th day of April I examined my trees again, and found that many of the American apple trees had made more or less premature growth; that the bark of many of them was easily separated from the wood, and that their cambium layers were full of slimy, liquid matter. By the middle of May it was very evident that from one-fourth to one-half of the bark on the southwest sides of the injured trees was dead, and that all of the American varieties were injured more or less, except one row of twenty-eight Fameuse trees, which I had manured heavily with stable manure 1872, 1874 and 1876, and this row was mulched heavily in 1878 with spoiled clover hay. But the bark on the bodies of the trees in three other rows of Fameuse trees, around which no manure had ever been used, were sun-scalded severely. When trees were slightly injured by sun-scald, their wounds were attacked afterward by flat-headed borers, which destroyed the bark around them rapidly until many of the trees were fatally injured. In this orchard about two hundred of the following Russian apple trees and some crab trees were not injured, viz: Duchess, Tetofsky, Alexander and the Hyslop, Montreal Beauty and Transcendent crabs.

In 1870 I planted thirty-two Wealthy apple trees around a well which was thirty-two feet deep and walled with rock. In 1879 all of these Wealthy apple trees were fatally injured by sun-scald, except one tree, which stood less than four feet from the well. It is a large and healthy tree now, because it obtained all of the water that it needed from the wall of the well, and it never failed to ripen in the fall after the dryest summers. In 1890 I grubbed out fifty-two large Haas apple trees twenty-one years old, which had been injured by sun-scald, and all of them had never produced more than ten bushels of salable apples, while on good orchard sites only a few miles away large Haas trees were healthy and profitable. In my orchard the Northern Spy suffered from sun-scald and it was not fruitful, while about sixty trees of this variety in another orchard in Black Hawk county, where it was only from eight to twelve feet down to a ledge of badly broken limestone and only from twenty to twenty-six feet above the water level, were very healthy and profitable for many years. And again, I have an eight-acre Wealthy orchard which was planted in 1889, where there had been an old lake of water in former times, and where the water level varies from twenty to twenty-five feet below the surface of the ground. This orchard has been very healthy and productive, and last fall it produced more than two thousand bushels of first-class apples, while across a slough not more than fifty rods from it in my old orchard, many Wealthy trees were killed by sun-scald, because they failed to ripen at the proper time after protracted summer droughts.

I have lost many Wild Goose plum trees on account of sun-scald after they have failed to ripen at the proper time in the fall, but I have been very successful in growing them when they were grafted on the limbs of the Black Hawk plum. In 1866 I had twelve acres of hazel bushes on the north side of my farm adjoining a large body of tall timber, and all over the hazel thicket there was a good stand of young burr oak and jack oak trees from ten to fifteen feet high. But in 1871 I fenced the hazel thicket and about twenty acres adjoining it for a cattle pasture. About 1884 nearly all of the hazel bushes had been destroyed by the cattle, and until 1888 I had never seen trees grow faster than the oaks in my hazel thicket; but in 1890 they made but little growth and afterwards they died faster than I could use them for fuel, fence posts and other purposes until now, when there are only a few of them left. As young oaks stood in other hazel thickets, which had not been disturbed by cattle, and continued to grow rapidly, the cause of my trees dying was not hard to explain. When the hazel bushes were destroyed the ground was covered very soon with a good stand of blue grass, and as it was closely cropped by from thirty to forty head of cattle, it was not long until the humus in the surface soil was very scarce and the ground did not contain enough of water to supply the wants of the oak trees, and they failed to ripen before cold weather.

There is not only a great scarcity of humus and water in the soils of many Iowa orchards frequently, but the same trouble extends to thousands of farms in Iowa where no attempts have been made to plant orchards. From 1855 until 1875 farm crops were much better in Iowa than during the last thirty years. During the former period of time from twenty to twenty-five bushels of spring wheat per acre was the rule; while during the latter period the crops became poorer, until ten bushels or less per acre were as much as the best farmers expected and they quit growing spring wheat. But the decline in the yields of oats, timothy and many other kinds of crops was nearly as great as in wheat. If we should say that such poor crops were caused by a decrease of the rainfall since 1875, the statement would not be true, as the weather records at McGregor and Muscatine show that the average annual rainfall (including rain and snow) in the northern half of Iowa during the last fifty years has been about thirty-four inches. We find that the average annual rainfalls in Iowa have differed very much, but that during the periods of five or ten years they have differed but little. The seven wettest years at McGregor between 1850 and 1890 were as follows, viz: 1858, 1860, 1876, 1878, 1881, 1883 and 1890. The average for the seven years was forty-two inches per year. The seven driest years were 1863, 1864, 1868, 1870, 1872, 1886 and 1889. The average for the seven driest years was twenty-four inches per year. There was a difference of eighteen inches between the averages of the seven wettest and the seven driest years.

From forty to fifty years ago all of the soils in Iowa were remarkably porous and they absorbed rain water rapidly. They contained large quantities of humus (decomposing vegetable matter) which attracted and held water like a sponge. From thirty to forty years ago atmospheric air entered into and circulated freely through the new prairie soils, and large quantities of moisture were condensed in them. But their condition now is very different from their condition then. Many crops of wheat, oats, timothy, etc., have destroyed most of the humus which they contained formerly, and instead of being porous and moist in dry weather they have become compact and dry. The inorganic food materials required by growing plants consist of nitrogen, potash, phosphorus, lime, sulphur, soda, chlorine, iron, manganese and magnesia. They are found in soils united as compounds, but they can not be used by trees and herbaceous plants until they have been dissolved by water, carbonic acid, oxygen, etc. The rainfall during the last forty years was sufficient to enable us to grow good crops of wheat, oats, etc., but we used it carelessly and extravagantly and the results were that we have had many poor crops and have low water levels now. How can we save enough of the rain which falls on our fields and orchards? is an important question which is not hard to answer.

The results of experiments, which were conducted by competent men, proved that remarkably large quantities of water are exhaled by many kinds of plants and the soils on which they are grown. Laws of England and Hellrigal of Germany have shown (after many careful trials) that the cereals, grasses and other kinds of plants, have exhaled water during their periods of growth to the amount of two hundred to three hundred times the weight of the dry matter in them when they were fully grown. They report also that an acre of wheat exhaled 400,000 pounds of water during its period of growth. The cereals, blue grass, timothy and other plants, which obtain their food through surface roots, cause a much greater loss of water from soils than red clover, corn and other plants which extend many of their roots to greater depths. To grow large crops we must have porous soils, which are well supplied with humus. The air circulates freely through such soils, and frequently during July, August and September more atmospheric moisture is condensed in them than fall from the clouds in the form of rain. The great value of humus in soils is shown by the results of an experiment reported by Dr. Stephen Hales, to wit: Equal weights of coarse sand, fine sand, ordinary clay soil, loamy soil and humus were placed in a damp cellar for twenty-four hours, when it was found that each of them had absorbed the following fractional weights of water, viz: Coarse sand, $\frac{2}{100}$; fine sand, 3-100; ordinary clay soil, $\frac{7}{100}$; loamy soil, $\frac{12}{100}$; and humus, $\frac{30}{100}$ of the weight of each sample. When humus is decomposed in soils, carbonic acid and other gasses are set free, which are necessary to render the different kinds of plant food available for the use of plants.

To restore the lost fertility of soils, proper tillage, stable manure and a short rotation of crops are necessary. The first crop should be Manshiry barley, or some other variety equally early and productive; the second crop should be red clover and the third crop should be a good variety of corn. The barley should be sown early in the spring on fall plowed fields. The variety recommended is productive; it would be ready to harvest in the first week of July, and it would require much less water from the soil than a taller and later variety of barley or oats. I would recommend red clover because it is very nutritious when it is properly cured; it takes large quantities of nitrogen directly from the atmosphere, and by plowing under the second crop, it would enrich the soil rapidly with humus. For the third crop I would plant first-class seed corn from the first to the fifth day of May in Black Hawk county, if the condition of the ground would permit it.

Then a Hallock's weeder or some other similar implement should be used three or four times until the corn is four or five inches high. Afterwards the ground should be stirred often with a cultivator having very small shovels, to the depth of two or three inches, for the purpose of forming a porous mulch to prevent loss of soil water. By adhering closely to frequent shallow culture I have always found that my nursery trees were larger and that my corn made more satisfactory growth and ripened earlier than where other kinds of culture were used.

# DRAINAGE, SEWAGE AND ROADS.

## THE NEW IOWA DRAINAGE LAW.

*Address of Hon. R. M. Wright, of Ft. Dodge, Iowa, Before the Iowa State Drainage Convention, Held at the Iowa State College, Jan. 13-14, 1905.*

Having been a member of the drainage committee of the Thirtieth General Assembly, I could not, when I was invited to address you on the subject of the new drainage law, well refuse to do so. In consenting to address you, I can not take up the law systematically and thoroughly, for this would require many hours. The most I can do in this address is to notice a few of those salient features of the law which are likely to require the most discussion and which are the most likely to be taken before the courts for adjudication. The questions involved in drainage laws go to the very basis of popular government. A well-known law writer expresses the matter thus: "The question whether or not, by reason of organization or otherwise, an aggregation of people can compel an individual, against his will, to bear or share the expense of drainage for the common welfare, reaches to the very foundations of any theory of democratic government. In governments founded on force the question can never become a practical one. But where all men are free and equal, and have established a government under which all have equal rights, by what authority can one man, or any number of men, say to another: We consider the drainage of a section of land necessary, and you must effect it or share in the expense of doing so? The only possible ground for such authority must be his consent, either express or implied. If the consent has not been expressly granted in the Constitution of the State, the questions then are: Is it necessarily included in his agreement to the formation of the government? Or, has he delegated authority to his representatives in the government to express his consent?

The hypotheses involved in these questions are so nearly identical that they may, for practical purposes, be regarded as the same. Does, then, the consent to the formation of the government include consent to bear or share the expense of drainage for the public good? There are certain things which all agree that he consents to, such as to share in the expense of the government and the maintenance of highways and to aid in the common defense against the public enemy and in the maintenance of order and punishment of crime. But he has expressly provided in most instances that his property shall not be taken from him for the private benefit of another, or even for the benefit of the public, unless he is compensated therefor. And the whole theory of the government is based upon the principle that burdens must be approximately equal and uniform. Applying these principles to the solution of the problem the answer would seem to be that necessary drainage is one of the things in the expense of which an individual consents to share when he consents to the formation of the government; that his share of the expense is to be determined, not by the benefit to himself merely, but by ascertaining his share of the total cost when divided among all the property benefited in proportion to benefits; that he can not be charged with any burden for the benefit of others who do not bear their share of it; and that in no case can he be required to drain for the benefit of other individuals.

When passing the drainage law to which I shall confine my remarks this evening, namely, Chapter 68 of the Laws of the Thirtieth General Assembly. the legislature was at all times confronted with two sections of the State Constitution, namely: Section 9, of Article 1, which provides that no person shall be deprived of his property without due process of law, and section 18 of the same article which declares that ''private property shall not be taken for public use without just compensation first being made or secured to be made.'' By implication the section last named forbids the taking of private property for private purpose, even though just compensation be made therefor. The Supreme Court of Indiana, in the case of *Tillman vs. Kircher*, 64 Ind., 104, aptly says: ''The legislature can not constitutionally enact any law authorizing one person to improve the lands of another by draining and compel the person benefited to pay to the other an assessment therefor unless the public also is in some way benefited thereby, as that the drain is necessary and conducive to the public health, convenience or welfare or of public benefit or utility, and then it can be done only by due course of law,'' but in *Wishmier vs. State*, use of Dickey, 97 Ind., 160, the court says that ''the legislature has the power to enact drainage laws providing for the drainage of wet and overflowed lands at the expense of those whose lands will be benefited thereby, if the public health will be improved, public highways benefited or the work be of public utility.'' If therefore, I desire to drain my land across yours, and in such drainage, there is nothing pertaining to public use, health, convenience, utility or welfare, I can not compel you to allow such drainage, even though I tender just compensation, and a statute purporting to give me such right would be unconstitutional, null and void. Again, in some stage of the proceeding, a party whose lands are to be affected is entitled to be notified and heard agreeably to the usages and methods of our institutions. If this right is not given, and the statute makes no provision for notice and for opportunity to be heard, there is no due process of law. The statute that is vulnerable to either of the objections I have mentioned is unconstitutional and utterly void. The following illustrations will serve to make plain what I mean:

Chapter 188 of the Laws of the Twentieth General Assembly provided that when one desired to put a tile drain through the land of another, he could make application to the township trustees and, by taking certain steps, have the same put through. This statute was held unconstitutional because it authorized the construction of a drain over the land of another in cases where the public might be in no manner affected. By amendment it was afterwards limited in its application to cases where the public was affected. This act of the legislature as originally passed was obnoxious to section 18 of Article 1 of the Constitution and was, therefore, void. Recently our Supreme Court held that section 1946 of the Code, before the same was amended by the Thirtieth General Assembly, was void because it provided for assessment of benefits upon lands not abutting upon the drain without providing that the owners thereof should be served with notice of such intended assessment. The statute was void because it was obnoxious to section 9 of Article 1 of the Constitution. It deprived the individual of his property without due process of law. Unconstitutionality, in the sense last named, can be readily avoided in a carefully drawn act, because the difficulty pertains simply to the method of procedure. Unconstitutionality, in the sense first named, is not so readily avoided, because the difficulty lies deeper and inheres, not merely in the method of procedure, but in the subject-matter of drainage itself. As I proceed in the discussion of the new drainage law, I shall from time to time notice the pretended unconstitutional features of the law.

Section 1 of the new law gives authority to the board of supervisors to establish drainage districts when the same will be of public utility or conducive to public health, convenience or welfare. Section 18 of Article 1 of the Constitution uses only the words "public use." By some authorities it has been held "public use" implies a possession and occupation and enjoyment of the land by the public at large or by public agencies. A public park or public highway is fairly illustrative of this conception of "public use." Under this narrow conception of the term "public use" it is hard to conceive how a drain through a drainage district could be said to subserve a public use. Giving to the words "public use" this limited sense, it would also be hard to see how the terms used in the statute, namely, "conducive to public health, convenience or welfare," could be said to come within the scope of the words "public use" as employed in the Constitution.

Public benefit or utility, however, has been held sufficient in a number of cases, to authorize an exercise of the power of eminent domain. Indeed, many of the decisions on this subject can not be sustained on any other hypothesis. Public use and public benefit or utility were held to be synonymous in *Aldrige vs. Tuscumbia R. R. Co.*, 2d Stuart & P., 199. Same case, 23 Am. Dec., 307; also in *Salt Co. vs. Brown*, 7 W. Va., 191; so in *Dayton Mining Co. vs. Seawell*, 11 Nev., 394, it was said that public use meant public utility, benefit and advantage; so in *Todd vs. Austin*, 34 Conn., 78; *Bradley vs. New York R. R. Co.*, 21 Ind., 294; *Great Falls Manufacturing Co. vs. Fernald*, 47 N. H., 456; *Hand Gold Mining Co. vs. Parker*, 59

Ga., 418, it was decided that public benefit or utility was enough to justify the exercise of the power of eminent domain.

The reason of the case, and the settled practice of free governments, must be our guides in determining what is, or what is not to be regarded as a ''public use;'' and that only can be considered such where the government is supplying its own needs, or is furnishing facilities for its citizens in regard to those matters of public necessity, convenience, or welfare, which on account of their peculiar character and the difficulty, perhaps impossibility, of making provision for them otherwise, it is alike proper, useful and needful for the government to provide.

Under this broader conception of the term ''public use'' it may fairly be held that when a thing is of public utility, or is conducive to the public health or to its convenience, or to its welfare, it comes within the connotation of the term ''public use,'' and is, therefore, not obnoxious to the Constitution, and as said by Judge Cooley, Constitutional Limitations, page 767, it is ''not necessary that the works are to serve all the inhabitants of the municipality, if they are to serve all in a particular district.

Three classes of cases may arise in the establishment of drainage districts. First, the class where the public element is so pronounced that there can be no dispute about it; second, the class where the public element is doubtful; and third, where the public element is entirely wanting. In the last named case it is to be presumed, the question being a judicial one, and a question for the courts, that the supervisors, sitting as a court, will refuse to establish the district, and, if they do establish it, the district court, on appeal, will dismiss the proceedings. If the district court, on the showing made, refuses to dismiss the proceedings, their findings become an adjudication that a public element does exist in the case and that, therefore, the establishment of the drainage district is constitutional. The first of the above named cases could never give any trouble, the second class is where most of the trouble is likely to arise. However, notice carefully the last words of section 1 of the Drainage Act. They read as follows: ''And the drainage of the surface waters from agricultural lands shall be considered a public benefit and conducive to the public health, convenience, utility, and welfare '' In the case of *Hazen vs. Essex County*, 12 Cushing, 546 the court says: ''If a public use be declared by the legislature (and in this case you will observe it was declared) the courts will hold the use public unless it manifestly appears by the provisions of the act that they can have no tendency to advance such public use.'' This holding of the Massachusetts court is quoted with approval by our own Supreme Court in *Bankhead vs. Brown*, 25 Iowa, 546. In section 600 of the 4th edition of Dillion on Municipal Corporations, it is said (and what it there said is supported by many authorities cited in the foot notes). ''If the legislature has declared the use or purpose to be a public one, its judgment will be respected by the courts unless the use be palpably private or the necessity for the taking plainly without reasonable foundation.'' In the case of the *United States vs. Gettysburg Electric R. R. Co.*, 16 Supreme Court Reporter, 429, the Supreme Court of the United States, in commenting on the rule laid down by Dillon, says: "The rule commends itself as a rational and proper one.'' This rule has also met with the approval of the Supreme Court of Wisconsin. It has also been held, 88 Am. State Rep., 936, that where there is any doubt whether the use to which the property is proposed to be devoted is of a public or private character, it is a matter to be determined by the legislature, and the courts will not undertake to disturb its judgment in this regard. From the authorities just cited, it follows that all doubts, as to whether or not the establishing of a drainage district would partake of the public nature required by the Constitution, are, under the law, to be solved in favor of the petitioners for the district.

Passing now to the following sections of the act, it is apparent that there are three primary questions to be considered. First, the establishment of the drainage district; second, the assessment of damages; and third, the assessments for benefits. Each of these questions involves the necessity of giving to the parties interested, opportunity to be heard and opportunity to appeal. Under the Constitution only one of these necessarily requires a trial by jury, namely, the appeal from the order assessing damages for the taking of the property. The act in question provides that the appeal from the order with respect to the establishment of the district shall be tried in equity, and in order to expedite matters, it is made triable at the first term after the appeal is taken. The appeals from the orders assessing damages and benefits are to be triable by a jury. As, under the Constitution, the appeal from the order assessing damages must be tried by a jury, it was thought proper by the legislature that the party appealing from the assessment of benefits should likewise be allowed a jury; and, here it may be well to say that, after the drainage district has once been established and the appeals therefrom, if any, have been determined, all constitutional questions arising under section 18 of Article 1 of the Constitution are at an end. The matter then is, as we lawyers say, adjudicated. The "public use" is settled by the establishment of the district. Thereafter, it is only the constitutional questions involving "due process of law," that can arise. Section 2 of the act provides that one or more persons whose lands would be affected can petition for the establishment of the drainage district. In the drafting of this section, it was thought that if the act required the petition to be signed by a majority of the property owners in the district in order to initiate the proceedings, the enterprise would be unduly handicapped. If, on the other hand, the petition could be filed by one who owned no property to be affected by the drainage, outside speculators, who desired, perhaps, to secure drainage contracts, would become too much interested.

Section 3 of the act, it will be observed, provides for the giving of notice of the meeting of the board of supervisors to all owners of land in the proposed district, and, also, to those who hold incumbrances on the lands through, or abutting upon, which the ditch, when constructed, would run. This notice is primarily to enable all who own lands in the proposed district to object to the establishment of the drainage district and to enable them to appeal from the order establishing the district if the same should be established at the first meeting of the board of supervisors as is provided may be done when no claims for damages are, prior to such meeting, filed. It is secondarily to enable those through whose lands the proposed drains will run, and those having incumbrances against the same, to file claims for damages if they so desire. If claims for damages are filed, then, the supervisors, at their first meeting, proceed no further, except to determine the necessity for the drainage district. They are required to determine the necessity of the drainage district because it would be useless for them to meet again, or for the auditor to appoint appraisers to assess damages, if the supervisors were not then of the opinion that the district was necessary and ought to be established. If claims for damages are filed, and the supervisors determine the drainage district to be necessary, a time is then fixed for the hearing and three appraisers are appointed by the auditor to assess the damages. On the coming in of the report of these appraisers, the supervisors get, in a general way, the amount which it will cost to pay the damages, and, in a general way, they are supposed to have informed themselves as to the cost of the construction of the improvement, and, then, if in their judgment, the money to be expended in paying damages and in the construction of the work, will be a greater burden than the lands should bear, they should refuse to establish the district. If, however, they think it is not a greater burden than the lands should bear, they, having therefore passed upon the necessity of the drainage district, are required to establish the same. They, then, proceed to pass upon the damages sustained by each claimant, and any person aggrieved by their decision, may appeal, either from the order establishing the district or from the award of damages.

It is urged by some that where no claims for damages are filed, the supervisors can not, without passing upon the damages of each one over whose land the improvement is constructed, establish the district, for they say, this would be taking private property without compensation and it would be in violation of the Constitution. It has, however, frequently been held that the right to compensation may be waived and that failure to make a claim may properly be treated as a waiver. Cooley says in his work on Constitutional Limitations, page 631 and 632, ''If the legislature, in taxing lands benefited by a highway or other public improvement, makes provision for notice by publication or otherwise to each owner of land, and, if hearing may, at some stage of the proceeding, be had upon the questions as to what proportion of the tax he shall pay, his property is not taken without due process of law.'' He also says on page 815, and he is supported by numerous authorities cited in a note appending thereto, that ''the right to compensation, when property is appropriated by the public, may always be waived.''

After the district has been established, the board of supervisors proceeds to appoint a competent engineer to estimate the cost of the work, and it lets the contract to the lowest bidder, the preliminary proceedings in respect to which are safe-guarded by requiring the bidders to deposit money as an evidence of their good faith in making the bid, and the successful bidder is then required to give bonds for the faithful performance of the work. After the assessment of the damages and the making of the contract, the board is advised as to what the total cost of the improvement will be, and it is then in a position to assess the benefits. It then appoints three disinterested commissioners, one of whom is required to be an engineer, to assess the benefits. They assess the benefits and make their report and the auditor then gives notice to each owner and occupant of the lands in the district of the fact of assessment, the amount thereof, the date of the hearing, and that all objections to such assessments must be made in writing and filed on or before noon of the day set for hearing. Only objections that are made in writing will be heard. This requirement that the objections shall be made in writing is made because it expedites matters and every objection can then easily be made a matter of record. On the day of the hearing the board of supervisors, acting as a court, can increase, diminish or annul the apportionment made in the report. There is, however, one provision in this section 12 of the act which, on first reading seems a little peculiar. It is this: "But in no case shall it be competent to show that lands assessed would not be benefited by the improvement." This provision is by some assailed on the ground that it is unconstitutional, but it is not. The assessment for benefits is not made until after the district has been established, and the establishment of the district is an adjudication that every acre of land in the district will be benefited by the improvement. The legislature has a right to say that every piece of land within the drainage district is benefited just as it has a right to say that all lands within one hundred and fifty feet of a sewer in a city are benefited. In the case of *Paulsen vs. Portland*, 149 U. S., 30, it was held by the Supreme Court of the United States that the determination of a territorial district to be taxed for the construction of a sewer is within the legislative discretion. In the case of *J & A. McKechnie Brewing Company vs. Canandaigua*, 44 N. Y. Sup., 417, it was decided that a statute, authorizing a village to construct sewers and assess the expense upon the property owners adjoining, and along the line of the sewer, concludes the question whether or not such owners are benefited by the improvement. In the case of *French vs. Barber Asphalt Paving Company*, 21 Supreme Court Reporter, 630, decided by the Supreme Court, it is said when the determination of lands to be benefited is intrusted to commissioners, the owners may be entitled to notice of hearing and upon the question of whether their lands are benefited and how much, but the legislature has the power to determine by statute that lands which might be benefited by the improvement are in fact benefited, and if it does so, its determination is conclusive upon the owner and the courts, and the owners have no right to be heard upon the question of whether their lands are benefited or not, yet only upon the validity of the assessment and its apportionment among the different parcels of the class which the legislature has conclusively determined to be benefited. In the case of *Allerton vs. Monona County*, 111 Iowa, 560 the Supreme Court of Iowa has said that the provision that "it shall not be competent to show that the lands assessed were not benefited by the improvement" pertains exclusively to the remedy and is applicable, although a statutory provision, in force when the tax was levied, authorized the property owner to show that his property was not benefited by the improvement. This holding is reiterated in the case of *Oliver vs. Monona County*, 117 Iowa, page 57.

Again, it would be hard to conceive of a piece of land in a drainage district which would not be benefited by the bettering of the surrounding roads, the doing away with marshes on the adjoining lands, and in many other ways. In the case of *Soady vs. Wilson*, 3 Ad. and El. page 249 (English case), it is said: "It is not necessary that the benefits should be direct and immediate to justify an assessment. Not only may collateral or indirect benefits be considered, but future possibilities may also warrant the levying of an assessment in some instances. Every one whose property derives a benefit from the construction of sewers may be assessed. The benefit may be indirect as by the approaches and neighboring public highways, being properly drained and cleansed, the property itself being so situated as to have no connection with the sewers." In the case of *Oliver v. Monona County*, 117 Iowa, 56, the court uses this language: "If the land in question was properly included in the drainage district, then the owner can not urge by way of objection to the assessments that the particular ditch constructed did not directly add to the value of his land. As was said in *Chambliss vs. Johnson*, 77 Iowa, 611: 'Lands are benefited by improvements which drain swamps and overflowed lands in the vicinity. The means of access to the lands at all times is a material consideration in determining whether a given tract should be assessed, and the health and welfare of the public in the vicinity are proper subjects of inquiry in fixing the boundaries of the territory benefited by the improvement. Indeed we think that if the adjacent highlands, which were not all affected by direct overflow, were benefited by the improvement of means of access by roads, and by the reclaiming of the low wet lands in the vicinity, they might be assessed in the amount of their proper and just proportion of the cost of the improvement.' If Oliver thought that his land was improperly included within the district proposed to be benefited by the contemplated improvements, he should have raised the question when the district was created." Again, if upon the hearing upon the assessments for benefits one was allowed to show that his lands were not benefited, and the supervisors should so find, the drainage districts would be torn into shreds and patches. Once show and adjudicate that the land is not benefited, and such land ceases to be a part of the drainage district, the district ceases to be the district created by the order of establishment and the adjudication establishing the district counts for nothing. The drainage act proceeds upon the theory that certain things must be done in a given order and that when so done they are fixed and permanent and serve as a basis for what comes after. While, therefore, it is not competent to show that a tract of land is not benefited, it is competent to show that the benefit is trifling. Under the scale of one hundred which has been adopted in the drainage act, it would be possible to asses the benefit to one piece of land as compared with the benefit to another in the ratio one hundred to one, and, in this way, substantial justice may be had. It is provided that an appeal may be taken to the district court from the order fixing the assessments for benefits within like time and in like manner as in appeals from assessment of damages.

The result of the numerous appeals from the hearing before the supervisors will sometimes, no doubt, reduce the aggregate of the assessment below the cost of the improvement, It is, therefore, provided in the act that if the first assessment shall be insufficient, the board may make an additional assessment and levy in the same ratio as the first.

In many cases, on the establishment of the drainage district, only a few of the laterals which will be ultimately needed will at first be constructed and, long afterwards, others will be constructed involving additional cost and expense. In section 13 it is, therefore, provided that in estimating the benefits as to the lands not traversed by the improvement, the commissioners shall not consider what benefits the land will receive, after some other improvements shall have been made, but only the benefits which will be received by reason of the construction of the improvement in question, as it affords an outlet for the drainage of such lands. In *Beals vs. James* (Mass.) 54 N. E. R., 245, it is said, "The benefits arising from the right to use a drain for the removal of a surface water may be the subject of a special assessment.'' In section 23 of the act it is provided that the owner of any land, lot or premises that have been assessed for the payment of the cost of the construction of the drain, shall have the right to use the ditch, drain, or water course as an outlet for the lateral drains from his land or premises. It will often happen that a tract of land in a drainage district may have ponds upon it, which, until laterals are constructed, will have no connection with the original drain or ditch, and it has been objected that such land is in no manner connected with the original drain, and as in order to get to the drain with the laterals, it may afterwards be necessary to cross the land of others, the land so situated receives no direct benefit and can not be assessed for benefits. It has been held, however, in *Mason vs. City of Chicago*, 53 N. E. Rep., 354, that property not contiguous to the main sewer may be assessed for its construction if it is in the same drainage district, and provision is made for the establishment of such sewer ultimately as an outlet for sewerage of the property. In *McKee Land and & Improvement Co. vs. Swikard*, 51 N. Y. Sup., it is said, "A sewer assessment which apportions upon the territory that has immediate need of the sewer and can make use of it at once, a sum sufficient to pay for a sewer for its own use, and upon more remote territory such a sum as would pay for the enlargement of the sewer made necessary to meet its requirements, is fair and conducive to equity of apportionment.''

Long after the establishment of a drainage district it will frequently happen that one owning land separated from the main drain by the land of another, may desire to tile across the land of such other into the main drain or ditch. The question then arises whether such tiling would be obnoxious to the Constitution in taking private property for a private purpose. The drainage district was established to promote a public purpose and every part and parcel of the land within the district, on the establishment of the district, came within the scope of that purpose; and it was within the contemplation of the authorities establishing the district that all persons owning land within the district should receive benefit therefrom, and to this end assessments were made against such persons. In other words, future drainage of their lands inhered in the public purpose to subserve which the district was established. It is, therefore, provided in section 24 of the act as follows: ''If any person who owns land within the drainage district which has been assessed for benefits and which is separated from the ditch, drain or water course for which it has been assessed, by the land of another or others, shall desire to ditch or drain his said land across the land of such other or others into such ditch, drain or water course and shall be unable to agree with such other or others on the terms and conditions on which he may enter upon their lands and construct such drain or ditch, he may proceed in the manner in this section provided, and the ditch or drain which he shall construct, or cause to be constructed, shall be considered to be conducive to the public health, welfare, convenience and utility to promote which said drainage district was established.''

I have confidence to believe that this section of the statute obviates the objection urged on the ground of unconstitutionality of such drainage.

After the amount to be assessed has been ascertained, the board proceeds in either of two ways. It issues certificates similar to those issued in cases of paving, or for the construction of sewers in cities, or it negotiates bonds and pays with warrants. The certificates may either be sold or issued to the contractor from time to time as the work progresses. Bonds, if issued, are to be paid from the proceeds of the assessment against the lands lying in the drainage district. These bonds do not differ materially from the bonds issued by cities to meet the expenses of paving and the construction of sewers.

Great consideration was required with respect to crossing railroad rights of way and the assessment of damages and benefits where railroads are concerned. At first it was thought that it would be well to require railroads to bear the whole expense of carrying the drains across their rights of way. But this proposal met with great objection on the ground of alleged unconstitutionality, some of the states holding that such procedure would be constitutional and others holding that it would not be. Not desiring to take any chance of wrecking the drainage act on the ground of unconstitutionality, it was finally determined to follow the methods laid down in sections 18 and 19 of the act. Knowing that, of all parties, railroad companies best understand the science of delay, it was provided that in case they should fail or refuse to act on notice being given them, the railroad commissioners should act for them and that the determination of the railroad commissioners as to the place where, and the course, direction and manner in which the ditch, drain or water course should cross the right of way should be final. It is also provided in section 19 of said act that should the railroad company fail, neglect or refuse to do the work within the time limited by the act, the auditor shall cause the work to be done under the supervision of the engineer in charge of the improvement, and action may be brought against the railroad company for the cost thereof in any court having jurisdiction. It is also provided that the cost of constructing the improvement across the right of way shall be considered by the appraisers as an element of its damages and that the commissioners to assess the benefits shall fix and determine the actual benefit to the property of the railroad company within the drainage district.

It has been suggested that because the right of way and tracks of railway companies can not be benefited for agricultural or sanitary purposes, the act as to railways is unconstitutional. It is said, however, in the case of *B. O. & C. R. Co. vs. Ketring*, 23 N. E. Rep., 527, that the easement or right of way of a railway company may be assessed for the construction of a ditch under an express provision of the statute making them subject thereto, and it has also been held in the case of *I. C. R. Co. vs. East Lake Fort Drianage District*, 21 N. E. Rep., 925, that a provision in the drainage law authorizing the assessment of a right of way and the tracks of a railway company within the district for benefits thereto from the proposed drainage is not unconstitutional and void because such right of way and tracks can not be benefited for agricultural and sanitary purposes, since the benefits to lands is not confined to agricultural or sanitary purposes, but the law authorizes the levy of such assessments in proportion to any benefits received from the drainage. In case of *Drainage Commissioners, District No. 3, Drainage vs. Ill. C. R. R. Co.*, 41 N. E. R., 1073, it is held that in order to justify an assessment of a railroad right of way running within a drainage district, it is not necessary that the track, as well as the right of way, be benefited by the drainage of the district.

The district is established on the principle that it will promote the public utility or be conducive to the public health, convenience or welfare, and this is a matter entirely apart from the particular benefits that each particular piece of land within the district will receive by the drainage.

Under the drainage act the cost of the improvement becomes a lien on the lands of the district and is not a personal claim against the owner. Being a lien, it runs with the land. As, however, under the law of this and many other states, the right of way of a railroad can not be divided and sold in separate parts and thereby taken from the railway as a whole, some special provision was needed. The act, therefore, provides that the special assessments against a railway shall be a debt due personally from the railway company, and, unless the same is paid by the railway company as a special assessment, it may be collected in the name of the county in any court having jurisdiction. In connection with the subject of railroads, it may not be amiss to say that in order to avoid and prevent delay and the getting out of injunctions and the resort of other methods of procedure, it is provided in section 47 of the act that the failure to appeal from the order of the board of supervisors of which complaint is made, shall be a waiver of any irregularity in the proceedings and the remedy provided for in the act shall exclude all other remedies. That such limitations may properly be made a part of the act, is abundantly sustained by the authorities. Cooley on Constitutional Limitations, 815, and in note thereto, numerous authorities are cited, says, "If the remedy is adequate and the party is allowed to pursue it, it is not unconstitutional to limit the period in which he shall resort to it and to provide that unless he shall take proceedings for assessment for damages within a special time, all right thereto shall be barred." He further says, page 814, "when the State has provided a remedy by resort to which the party can have his compensation assessed, adequate means are afforded for its satisfaction."

It is a fact open to all, that the best and most effective thing to be done in order to get good roads, is to get rid of the surface water. It is obvious that a system of drainage which the establishment of drainage districts inaugurates, will do much for the betterment of roads and highways. Accordingly ample provision is made in the drainage law for the exaction of payment for benefits to the roads and highways. It is a matter open to common observation that roads which, during a large part of the year, are practically impassable could be made good and serviceable if only they were drained. Frequently drainage could be readily had if permission could be obtained to carry the surface water over and across adjoining lands. Section 44 of the drainage acts provides what steps shall be taken to obtain the right to carry such drainage over the lands of adjoining owners. In the case of highways, there can be no question as to the constitutional right of the township trustees to initiate the necessary condemnation proceedings, for their acts in so doing have reference to the use of public highways and such use is the most notorious public use that is known to the law. The Supreme court of the State of Illinois in the case of *Colfax Highway Commissioners vs. East Lake Fork Special Drainage District*, 21 N. E. Rep., 206, holds that "where the drainage of swampy or marshy ground will improve a highway over the same and the public will be benefited thereby, a drainage district including such highway will be doing that which it was the duty of the highway district to do, and it imposes no burden upon the latter that it should be required to contribute to the benefit it thus received toward the cost of such drainage." In the 58th Lawyers Reports Annotated on page 372, it is said that "under the laws of some states, drainage is done by districts which are practically minute political divisions of the State. In such cases, all the property affected by the drainage is placed in the district and the cost of the improvement is assessed on the entire district and apportioned among the property owners by different rules."

The location and construction of railroads calls into activity one of the highest attributes of sovereignty—the power of eminent domain. The location of drainage districts and the assessments for benefits call into activity two of the highest attributes of sovereignty—the power of eminent domain, involving also to some extent the police power of the State, and the power of taxation The proceedings leading to, and culminating in, the assessment of damages involve the power of eminent domain, while the assessment for benefits involves the taxing power. It is because the taxing power is involved that the legislature had the right to enact in section 46 of the drainage act that the tax provided for in the act, when levied, should be a lien upon all premises upon which the same is assessed to the same extent, and in the same manner as taxes levied for county and State purposes. In the case of *Wabash Eastern R. R. Co. vs. East Lake Fork Special Drainage District*, 25 N. E. Rep., 781, the court says: "The power of drainage districts to levy special assessments, conferred by statute, is an exercise of the taxing power, and the lien given by such statute on the real estate assessed is the same as that given in cases of general taxes, and such lien is therefore superior to all other existing liens or claims against the property." In the case of *Chaney vs. State ex rel. Ely*, 21 N. E. Rep. 45 (Ind.), it is said that "a purchaser of land, during the pendency of a petition for drainage from a grantor who is named in the petition, and has notice thereof, is bound by the proceeding to the same extent as though he had held the legal title when the petition was filed, and had been named therein and notified under a statute making such an assessment a lien."

By section 46, of the drainage act, the tax, when levied, becomes superior to mortgages and to all other incumbrances except taxes for general county and State purposes. Because of this superiority, there is no need to give notice to incumbrancers of the assessments for benefits. and the act provides for no such notice. On the other hand, notice to incumbrancers of the assessment of damages is necessary for such assessments involve the exercise of the power of eminent domain, and the incumbrancer is entitled to be heard with respect to the compensation he is to receive and for the payment of which the constitution provides.

Section 47 of the drainage act is one of the most important sections in the act. It provides, in substance, that no narrow construction shall be given it by the courts; that if the constitutional rights of the parties have not been infringed upon, and if their substantial rights have been preserved, no mere technicality or irregularity shall defeat the law, but it shall, by the courts, be construed so as to advance the remedy and promote the great object to attain which the law was enacted. The section reads as follows: ''The provisions of this act shall be liberally construded to promote the leveling, ditching, draining and reclamation of wet, overflow or (of) agricultural lands; the collection of the assessments shall not be defeated, where the proper notices have been given by reason of any defect in the proceedings occurring prior to the order of the board of supervisors locating and establishing the levee, ditch, drain or change of natural water course provided for in this act, but such order or orders shall be conclusive and final, that all prior proceedings were regular and according to law unless they were appealed from. But if upon appeal the court shall deem it just and proper to release any person or modify his assessment or liability, it shall in no manner affect the rights or liability of any person other than the appellant; and the failure to appeal from the order of the board of supervisors of which complaint is made, shall be a waiver of any illegality in the proceedings and the remedies provided for in this act shall exclude all other remedies.'' Some objection has been made to this section, in that, it is asserted, it makes the order establishing the district conclusive and final, even though the irregularities preceding the establishment of the district were such as should defeat the establishment itself. This criticism is not warranted. The act says that ''the collection of the assessment shall not be defeated where the proper notices have been given, by reason of any defect in the proceedings, occurring prior to the order of the board of supervisors locating and establishing the levee, ditch, drain or change of natural water course.'' The notices here referred to include those notices that precede the establishment of the ditch as well as those that immediately precede the assessment for benefits. The notices having been duly served, the board of supervisors has acquired jurisdiction, and the section forbids the party who assails the validity of the assessment and seeks to defeat it by reason of irregularities and defects in the proceedings to go further back than the order establishing the district. The proper notices having been given, the irregularities that precede the order establishing the district are those that pertain to the establishment itself. Once get the district established, such irregularities cease to be material, and, by the order establishing the district, their insufficiency has been adjudicated. The statute, therefore, wisely forbids the attempt to relitigate matters that have been settled.

I had hoped to say something about the law that relates to two or more counties when acting together and in concert, but, as the subject is a large one and would take much time, I deem in not best now to weary you by attempting to say anything further. I thank you for your kind attention.

# APPRAISEMENTS OF DAMAGES AND ASSESSMENT OF BENEFITS IN DRAINAGE WORK.

*Address of Mr. C. G. Elliott, Drainage Expert, Department of Agriculture, Washington, D. C., Before the Iowa State Drainage Convention, Iowa State College, January 13-14, 1905:*

Without a State law providing for the co-operation of landowners in the execution of drainage work, no such improvements of a general character are impossible. Common law, by which is understood the law established by court rulings or customs reaching back a century or more, has operated against and in many instances prevented the drainage of farm lands in this country. According to these rulings, the water of streams must flow as it always has flowed. If nature has placed it in ponds, lakes and sloughs, it must remain there. When a landowner attempts to change or modify the flow of a stream, however small, by artificial means, or discharge water into it in a manner different from that of nature, he may in the absence of a specific statute governing such cases be enjoined by a neighboring property owner, provided injury or inconvenience therefrom can be shown.

## OBJECT OF A DRAINAGE LAW.

The object of a State drainage law should be to permit owners of lands to combine or co-operate in draining them when necessary and to apportion the cost of the work to each as his property may be benefited. At the same time, owners should be secured in their property rights and have the opportunity to obtain redress in the proper courts if the apportionment of the expense of the work and appraisement of damages are not equitable and fair. While the administration of drainage laws varies somewhat in the different states, the theory of their operation and object to be secured are the same. Every drainage project which requires combined actions of land owners for the improvement of farm lands should be so administered that when the work is completed each owner will have been remunerated for property taken for the common good and will have shared the expense of the improvement in proportion as his property has been benefited. This is an essential and well-understood provision of all drainage laws, and the theory upon which it rests is pronounced sound by those who have given the matter attention. If correct principles are recognized and sound judgment exercised by those charged with determining the amount of damages and benefits, the result of their work will usually be equitable and commend itself to the sober judgment of those whose property is affected.

## VESTED RIGHTS OF DRAINAGE.

It can not be denied that there is room for a difference of opinion upon matters connected with values of property and benefits accruing to it from drainage. The same may be said concerning the settlement of any financial questions in which several individuals are interested. There are, however, general principles which underly the apportionment of the cost of drainage which should be given their proper weight in the consideration of every case.

It is first necessary to understand the relation of natural to artificial drainage when carrying out the provisions of the drainage law. Artificial drainage only supplements natural drainage and is planned and executed by man to complete what nature has already only indicated or begun. Every owner of land is entitled to all natural drainage advantages pertaining to his property. His title of ownership carries with it a right to all values bestowed by nature. All natural channels affording adequate outlets for portions of his land requiring artificial drainage, the undulating surface or peculiar character of its subsoil which may render its drainage comparatively simple and easy, are elements of value which go with the land and should be duly considered in making plans and assessments for its more complete drainage. On the other hand, possibly his land has no natural outlet for its drainage is level, is wet or overflowed by the natural run off from adjoining lands—all of which features, being natural, are as much a part of his possession as those having value. The principle then, is, natural drainage facilities possessed by farm lands belong to their owners. The cost of artificial or supplementary drainage should be paid by the owners of the land affected in proportion to the benefit conferred by the work. The successful application of this principle in making drainage assessments depends largely upon the judgment of those charged with such duties and upon the comprehensive manner in which they consider all of the factors entering into the problem.

### CLAIMS FOR DAMAGES.

The Iowa law permits one or more landowners who desire the establishment of a drainage district to file a petition for the same with the county auditor, which petition is presented to the board of supervisors for consideration at any meeting. The board at once appoints an engineer who is instructed to examine and survey the lands described in the petition and in his report to the county auditor to show what lands are affected, with the names of their owners, and file a plat showing the plan of the proposed improvement, together with an estimate of its cost. The auditor then serves notice on the owners of the land affected by the proposed improvement that any claims for damages by reason of such proposed improvement must be filed in writing five days before the day set by the board for hearing the petition. This opens the way for filing all manner of damage claims on account of the proposed improvement. Since damages are a part of the cost of the work, the amount must be determined before proceeding further with the project. The law directs that three appraisers be appointed by the board to examine these claims and report to the board in due form the amount which should be allowed each claimant. The question now arises, what are damages in the sense in which the term is used in the law and what principles should govern in fixing their amount? We may observe that in carrying out drainage improvements four classes of property may be affected: (1) farm lands, (2) public highways, (3) railroads, (4) incorporated towns and villages. Damage claims should be considered irrespective of offsetting benefits, since under the Iowa law the two are determined by different and distinct commissions.

### AWARDING DAMAGES.

Damages to owners of farm lands are, first, for land used in the construction of an open ditch which is built for the common good. If this is the improvement of a water course which already occupies a certain acreage of land, the owner should be paid for only the additional land taken by the ditch, including its waste banks, at its actual value for productive purposes. If the plan involves a cutting off of bonds in such a manner that first-class tillable land is taken for the ditch, then a fair value, considering the quality of the land, should be paid for it. Such cuts are made because the interests of the district at large will be better served and hence individuals injured thereby should be properly renumerated.

Second, for inconvenience and expense in the cultivation of farm land resulting from a new division of field or farm. If the divided parts of the farm are to be connected by a bridge constructed at district expense, there should be no complaint on that score. To ascertain the amount due by reason of changing the shape of the field, determine the annual extra cost of cultivating or cropping the field for a series of three to five years, which will cover an ordinary rotation of erops. This determination should not be made upon a fictitious or speculative basis but upon actual cash and labor value. When this annual extra cost has been determined, the damages allowed should be such a sum as, placed on interest at the lowest rate at which long-time, well-secured loans can be made, will pay the annual cost. Such damages arise from irregular or angular cutting of fields and should not be considered unless it appears that the owner is put to an annual extra expense or that property is destroyed by reason of the construction of the ditch.

Should the drain be constructed of drain tile, there is no damage to the landowner unless growing crops or other property be destroyed by reason of the prosecution of the work, in which case the actual value of the property taken should be allowed the owners.

The Iowa law requires that the cost of those parts of a drainage ditch which cross public highways shall be paid from the township road fund. This cost should be regarded as damages due the road from the drainage district. A ditch constructed along a roadway and parallel to it will occasion inconvenience to public travel during the course of construction. Most of this can be obviated by providing a temporary side road, which should be done at district cost and will be an expense item. The earth excavated from a large ditch when deposited upon a roadway will not become a good track until it is leveled and properly smoothed. The labor required for this constitutes damages unless the district assumes the responsibility by contract of putting the road in good condition for travel. If not, the road fund should be allowed the cost of such work, which, including inconvenience to public travel, will be approximately $200 per mile. The fact that the roadway can not be put in good condition until the season following the construction of the ditch, should be taken into consideration.

The law requires railroads to construct the district ditches across their rights of way and specifies that the cost of such work is a proper damage claim to which may be properly added the expense of removing and replacing any existing bridges. If the company desires to replace an old structure with a better one, the district should pay the value of the one removed and a fair remuneration for safeguarding the road during the construction of the new one. The claims of some roads for other damages by reason of drainage ditches crossing or paralleling their tracks are not well taken, especially where ditch grades are light and no serious danger from erosion exists.

All damage claims allowed become a part of the cost of the proposed work. The board of supervisors are directed to appoint a meeting to hear complaints concerning awards made by the appraisers, and may increase or diminish the amounts allowed. There is no good reason why any claimant should appeal to the district court if both appraisers and board of supervisors have regarded correct principles and exercised good judgment in their work. No court is as well qualified to adjust differences in these matters as the two boards who have considered the claims in detail.

It should be noted that thus far the work of organization has consisted of determining upon a plan and obtaining an estimate of the cost of its execution. If in the judgment of the board the estimated cost of the work as now ascertained will not be a greater burden than the land benefited should bear, they shall locate and establish the ditch.

### ASSESSMENT OF BENEFITS.

The next step pertaining to the financial part of the project is to apportion the estimated cost of the work to the property affected according to the benefits which it will derive from such work. For the purpose of making this apportionment the board is authorized to appoint three commissioners, one of whom shall be a civil engineer, who shall classify the lands affected by dividing them into forty-acre sub-division and marking the tracts receiving the greatest benefit, 100, and other tracts benefited in a less degree such a percentage of 100 as the benefit received bears thereto.

### CLASSES OF BENEFITS.

Benefits conferred upon farm lands by such drains as are usually constructed for outlets in an established district are of three classes:

1. Direct benefits such as the land derives from an adequate and independent outlet afforded by a public ditch which abuts the tract or by the passage of a ditch through the land, thereby giving it direct drainge in addition to outlet privileges.

2. Indirect benefits such as the right of owners of land requiring drainage to use the public drain as an outlet whenever laterals shall be constructed to it or protection of land from overflow by means of ditches which intercept drainage water that would otherwise flow over it.

3. General benefits such as additional healthfulness of the resident of the district by reason of the drainage of some near-by pond or swamp, convenience in cultivation and management of lands, or other benefits resulting to property from the drainage of adjoining lands.

These are all assessable benefits but should have different weights in the classification of lands for the apportionment of the cost of drainage.

## ELEMENTS OF CLASSIFICATION OF FARM LANDS.

The following are the elements which enter into the classification:

1. The natural condition of the land—whether wet, medium or dry.
2. Its distance from a natural channel or stream which will afford a sufficient drainage outlet.
3. Its elevation above the level of such channels or streams.
4. The risk of its being overflowed by natural streams bringing water from higher lands.

It is clearly stated in the Iowa law, and also in the drainage laws of all other states except one, that land receiving the greatest benefit from the work should be assessed the highest.

## PRINCIPLES OF CLASSIFICATION.

The principles which should govern classification for assessment purposes will appear in the following representative cases:

First case: Where the improvement consists of a single main channel, constructed to furnish an outlet for the drainage of land lying on either side of and at different distances from it:

(a) If the land bordering the ditch is wet or overflowed and the proposed ditch or improvement of the water course will reclaim it and also afford an ample outlet for the drainage of abutting land, it will receive the greatest benefit and should be marked 100 in classifying.

(b) Lands requiring drainage but lying farther back and not having sufficient outlet, will be benefited for the reason that they may be drained as soon as a lateral is constructed. These lands should be graded back from the main ditch to the limit of benefit which, if the tracts of land are similar with respect to their natural drainage advantages, would make their classification run from 100 to 0. In fixing this ratio the elements heretofore mentioned entering into the question, that is, the natural condition of the land, its elevation, etc., should receive their respective weights.

Second case: (a) If laterals are constructed from the main channel to give drainage to the outlying lands, then the wettest tract lying farthest from the main outlet, if furnished a drainage outlet, should be marked 100.

(b) If, however, a similar tract situated nearly the same distance from the main channel has a ditch passing through it, thereby giving it actual drainage in addition to outlet privileges, it should be marked 100, and other tracts proportionately.

General benefits are assessable if they accrue directly from the construction of drainage works and should be considered in connection with the others in making the classification. It is quite clear that the commissioners charged with the duty of apportioning the cost of the work should be well informed upon land values and the effect of drainage improvements upon them. A careful personal examination of the land and of the relation which the proposed work bears to its improvement should be made by the commissioners before a classification can be intelligently made, which classification should be studiously reviewed and corrected before being reported to the board of supervisors.

### ASSESSMENT OF PUBLIC HIGHWAYS.

Public highways within a drainage district are benefited by the construction of ditches and hence may be assessed for a portion of their cost and maintenance. The assessment, however, must be made upon a different basis from that of farm lands. The title to land occupied by highways is in the abutting owners, who are assessed for the improvement as "farm land." The public highways do not derive their benefits from added productiveness of the soil as do farm lands, but from their improvement as roads for travel. The public using such roads receives a benefit by reason of their improvement. An assessment for road benefits when made must be paid by all property owners in township and county upon the basis of assessed valuation of property and is not restricted to property within the drainage district. The Iowa law charges the cost of constructing a ditch across a right of way and of building necessary bridges to the township road fund and the county bridge fund respectively.

The assessment against highways within the district should be a percentage of the entire cost of the ditch improvement on the theory that there is a ratio of value existing between highways and the property they serve. The greater the value of the property served by the road, the greater the value of a good road to it. The drainage ditches of a district may in some cases make possible improvements of very great value to the highways; in others they may affect them but little.

The percentage of cost of district drainage which should be assessed against the highways should not often be less than two per cent nor more than eight per cent. From this amount should be deducted the cost of construction across rights of way in the several cases, since in Iowa the law charges this expense to the road fund.

### ASSESSMENT OF RAILROADS.

Railroads constitute another class of property affected by the drainage district work. The Iowa law requires the railroad to construct the ditch across the right of way, the expense of which should be credited to the railroad company. With reference to the assessment of railroads, the law says:

"And the commissions to assess benefits shall fix and determine the actual benefits to the property of the railroad company within the levee or drainage district, and make return thereof with their regular return."

If the drainage improves the stability of the road bed or makes more permanent structures across the water ways possible, there is a benefit which is assessable. The assertion that the increased production and consequent addition to the business of the railroads which cross the district, resulting from the reclamation and improvement of the farm lands and highways, constitutes an assessable benefit may be disputed. That the railroads within the limits of a drainage district share in a most substantial manner in the benefits accruing from drainage work can not be denied. Transportation is as much the business of railroads as the production of grain and live stock is to the farmer. The business of both is directly and specifically increased by drainage district work provided such work increases the volume of the production of the fields. The policy pursued by some railroads during the past twenty years has been liberal and helpful to land drainage, upon the ground that such improvements increase their business. The resulting increased production is a well-recognized adjunct of the prosperity of the roads. On the other hand, instances are not wanting in which railroads have strongly fought drainage where it would ruin hunting, fishing and other resorts, on the ground of injury to a lucrative transportation business.

It is quite clear that in equity railroads should be assessed a percentage of the cost of the improvement on the ground of benefit to business, especially where the production of large areas of land through which the roads pass is substantially increased. In such cases an assessment upon the railroads within the district of two to four per cent of the total cost of the improvement will commend itself to the judgment of an assessing commission as a fair proportion of the expense which such roads should bear.

The law does not contemplate assessing any of the properties affected by the drainage all that it will be worth to them but to equitably proportion the actual cost to such properties as will be benefited. Damages as defined by the law constitute a part of the legitimate cost of the proposed improvement and should be determined upon the same basis as the cost of excavation or engineering, that is, reasonable current prices should be allowed by the district at large for property of individuals or rights granted by them for the advantage of the drainage district.

## MAKING THE ASSESSMENT ROLL.

The method of making up the assessment roll is now simple. The amount of damages added to the estimated cost of construction, which latter should include organization, legal, engineering and other expenses, will constitute the entire estimated cost. This sum less the net amounts due from highways and railroads must be apportioned to the several tracts of land according to the percentage marks given to each.

It should be said here that there are benefits of a public and general nature for which an assessment can not be fixed. They are not limited to the district in which the improvements are made but may be regarded as reflective. The reclamation or partial improvement of land by drainage increases the value of the property in the drainage district and this will diminish the rate of tax upon all the property of the township and county and also add a reflected value to adjoining farm lands which are not assessed for the cost of the drainage. In some instances the heathfulness of the territory outside of the drainage district is improved. The business of towns adjacent to the improved district is increased. In short, there is a general reflected benefit to many business interests, resulting from drainage work in organized districts for which no special assessment is provided for by law. The assessment made upon highways is the only one which reaches the public and is spread over property outside as well as inside the district, according to the assessed valuation. Through this provision of the law all property within the district and also within the county will be taxed to some extent for drainage district work administered in accordance with the provisions of the State law.

Assessments of damages and benefits need not and should not be carried to the courts. The principles of equity and fairness which should prevail in the adjustment of these cases can be more effectually applied by the commissioners of assessment and by the board of supervisors who have familiarized themselves with these matters than they can by any outside court. Every landowner affected by drainage work, as well as officials in charge of its administration, should look at these questions on all sides before deciding whether or not an equitable assessment has been made.

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## THE RELATION OF THE SOIL TO UNDERDAINAGE.

*Address of Prof. W. H. Stevenson, Secretary of the State Drainage Association, Before the Iowa State Drainage Convention, Ames, Iowa, January 13 and 14, 1905.*

A year ago an effort was made to prove that there were many thousand acres in Iowa which were not wholly productive because of a lack of adequate drainage. Investigations made at that time showed that there were nearly five million acres of such land in the State. During the past few months a number of factors have induced many landowners to become thoroughly interested in the problem of land drainage. Not a few of this number have drained extensive areas; others are diligently seeking for information which will enable them to proceed with their drainage work intelligently and with the assurance that the methods of construction adopted are correct.

At the present time there was a goodly number of drainage engineers who are well qualified by training and experience to handle the majority of the engineering problems which they encounter in field work. Much valuable data has been secured regarding the location of drains, the fall or gradient, the size of tile and the construction of outlets. But there is one fundamental problem which is little understood, which is ever troublesome and which gives rise to a great many important questions on the part of engineers and landowners.

The problem is this: "What is the relation of underdrainage to the soil?" There are at least two phases of the question which merit our attention: "How is the soil benefited by underdrainage?" "To what extent does the character of the soil determine the depth to which drains should be laid and the distance between drains?"

A fund of quite definite information in now available regarding the first of these questions and therefore we do not propose to enter into a detailed discussion of the benefits to the soil from drainage. However, numerous inquiries have been received during the past few months for data along this line, and we take this opportunity to emphasize the fact that the soil is greatly benefited by underdrainage, as is definitely proven by the following facts:

The soil which the farmer plows and cultivates is not a solid mass of material. It is made up of an almost infinite number of fine particles of irregular shape, varying sizes and different properties. These particles range from those too small to be seen with the naked eye to those the size of pebbles, or even small stones. There is a large amount of pore space, or space intervening between the soil particles, which in an average soil equals nearly half its volume. When all these pore spaces are filled with water, the soil is said to be saturated. A soil which is completely saturated with water can not grow cereals and other valuable farm products.

If tile drains are placed in the ground they afford an outlet for the surplus water which is carried downward by the force of gravity. But the tiles do not render the soil absolutely free of moisture, for a force which is known as surface tension, holds a film of water over the entire surface of each particle of soil. In this way a supply of water is held in a drained soil for the use of plants for it is this capillary water, which constitutes from fifteen to twenty per cent of all the water a soil will hold, which will not pass off as drainage, but furnishes moisture for the plant and aids in the preparation of plant food.

Soils which are made up of fine grains retain the greater quantity of water because the fine grains possess a larger surface area in a given volume of soil. Soils of this class also require more artificial drainage than coarser soils owing to the fact that the closeness of the particles reduces the rate of percolation downward under the force of gravity.

With this knowledge of the structure of the soil and the relation of soil water to plant growth, it is not difficult to understand that the soil is greatly benefited by adequate drainage.

Adequate drainage increases the firmness of the soil and thus renders it fit for cultivation earlier in the season. The surplus water readily percolates through the underdrained soil and permits the surface to become firm and solid. This firmness of the soil, which makes it possible for teams to pass back and forth without injuring the texture or rendering the surface uneven, can not be secured when the spaces between the soil grains are filled with water, for then there is a lack of surface tension and the soil grains move so easily upon one another that a team mires. Near the northern limit of the corn belt the advantage gained by working and planting the soil a week or ten days earlier in the spring and thus lengthening the season to that extent, is an exceedingly important one. There are a few seasons when the larger and more profitable varieties of corn are not frosted in northern Iowa and southern Wisconsin and Minnesota.

Oxygen in the soil is as essential for the life of the plant as it is for the animal. Without free oxygen in the soil the seed fails to germinate and in a short time rots; the roots of the plants fail in their appointed tasks; the innumerable host of soil bacteria, whose work it is to change the nitrogen of decaying organic matter into an available form, perish, and the germs on the roots of the red clover and other leguminous crops, which supply available nitrogen at the lowest cost, do not accomplish their important work.

When the soil is full of water to within a few inches of the surface, there can be no circulation of air among its particles. Drainage ventilates the soil by lowering the ground water three or four feet and thus makes it possible for the roots of plants to penetrate the soil more deeply. In time these roots die and decay, and afford passage-ways throughout the soil for the ready movement of the air. Thus conditions are secured which promote the growth of plants, facilitate the work of the unlimited host of soil bacteria and hasten the formation of available plant food.

Wet soils are cold soils. This is true for the reason that a large amount of heat is used in the process of evaporation of surplus water. Therefore a well tiled field, from which the water is drained, must necessarily prove warmer than one which is watterlogged. King states that the amount of sunshine which will warm a given weight of water ten degrees Fahrenheit will raise the temperature of an equal weight of dry sand 52.38 degrees Fahrenheit, clay 44.58 degrees and humus 22.60. In the spring it often occurs that a drained soil is ten to twelve degrees warmer than the undrained soil. This is due to the circulation of air in the soil and the absence of evaporating water. An early, dry, warm seed bed is an essential factor in successful farming. It has been shown by experiments that sixteen days elapsed before corn appeared above the ground when the temperature of the soil was sixty degrees Fahrenheit and that an equal growth was made in three days with the soil temperature at seventy-two degrees.

When a field is poorly drained at the time of germination and early growth of the crop, the root system must of necessity develop near the surface. The result is that the feeding area is too restricted, and later, when the crop needs a large supply of water, the surface soil becomes very dry because capillarity can not act with sufficient rapidity to meet the demand for moisture. In well drained fields the deeper soil is occupied by the roots earlier in the season and not only is the ground water more accessible, but the upper soil is not so readily dried out by a multitude of roots near the surface, and hence capillarity more easily maintains favorable moisture conditions.

The experience of farmers shows that crops suffer less in time of drought on well drained clay or alluvial soils than they do on the same type of soils not drained. Underdrained soils dry out very completely near the surface in time of drought and therefore water rises by capillarity in them very much more slowly than in moister soils. For this reason it is very important that the soil just beneath the surface be kept as moist as the growing crop will permit. Furthermore in a well drained soil the roots of the plants spread out and go deeper in the early spring and summer. For this reason they are located nearer the ground water supply and do not exhaust the moisture near the surface to such an extent that capillarity is seriously impaired. This supply of water furnished by the action of capillarity aids in bringing the plant food into an available form and carrying it to the plant while the deeper growing roots secure from the ground water supply much of the water given off by transpiration. Hence well drained soils are better fitted for crop production in time of drought than the same class of soils not drained.

Again, underdraining not only carries off excess water, but it also renders the soil more moist when it is comparatively dry, because in time of drought, the air upon the surface is heated by the sun's rays that are absorbed by the soil. The heated air expands and a certain volume is expelled from the soil. The space made vacant by the air which has been forced from the soil is gradually occupied by warm air which enters the drain, and steadily ascends through the soil. But the soil a few inches below the surface is cooler than the air which enters the drain and hence this air is cooled with the result that the soil is moistened by the water which is deposited by the air.

In many sections of the central west serious losses frequently occur owing to the heaving of grass and cereal crops. Proper drainage of the soil is doubtless the most effective remedy for this difficulty. When soil water freezes it expands; the surface soil is thus raised and the roots of the plants are torn from their place of growth. Shallow rooted plants are thus left on top of the ground after the surface soil has thawed and settled into position. It is not an uncommon occurrence after a series of freezes and thaws, in the latter part of the winter or early spring, to find roots of clover, wheat and some other crops partially or wholly exposed. The percentage of plants thus destroyed in many fields in a single winter is so great that the farmer is compelled to reseed the land. Soil which has been drained and is free from surplus water is well supplied with interspaces filled with air. Therefore, when the soil moisture freezes, abundant room is afforded for expansion and thus the plant roots are protected in the largest measure from the injurious results which it has been shown follow the expansion and contraction of the surface of the soil.

Again, many farmers do not appreciate the value of draining rolling land. They do not understand the results which follow tilling land of this character. On hillsides, having a clay subsoil, the water which falls upon the surface will sink into the soil and be carried off underground instead of over the surface if an underdrain has been located in the subsoil at the depth of three or four feet. When these hillsides are drained this surplus water will be readily carried off, with the result that the soil will not become so thoroughly saturated and surface washing will in a large measure be prevented. In a few years this well drained land will be greatly improved by the accumulation of humus within the surface soil, by the circulation of the air among the soil particles and by the action of the soil bacteria, which, now for the first time, find within its depth a suitable and congenial home. On hillsides not adequately drained the surface soil, permeable by water, is very thin and is frequently underlaid by a stiff and almost imprevious clay. The result is that when beating rains fall they carry more or less of this surface soil into the valleys below. This action annually removes a considerable portion of the most fertile soil and is one of the most potent factors in keeping these rolling lands less productive than they would be under more rational management.

The one problem, which doubtless more than and other, is extremely perplexing to the drainage engineer, is that relating to the depth and distance apart of drains in the various types of soil such as sand, clay, gumbo and peat. Few written statements, based upon experimental work, can be found regarding the subject. Farmers and engineers have many theories along this line, but after all, the fact remains that very few men, if any, are in a position to give definite recommendations regarding the drainage of a given area of any of these soils which are among the most difficult to drain. There are good reasons why this is true. In the first place drainage work in this country has extended over a comparatively brief period of time, and secondly, in few instances have records and data been kept regarding drainage operations. This lack of definite information is a serious drawback to the drainage of lands which would be immeasurably improved by the removal of surplus water.

Therefore we have endeavored to collect from various sources, facts and suggestions regarding the drainage of clay, gumbo, muck and peat soils. Soils of these classes are found in large areas in Iowa and the drainage of these tracts is a work of the greatest economic importance.

For ordinary farm crops it is not often necessary to lower the soil water to a depth to exceed four feet. Frequently the lowering of the water table may be less. Experiments have shown that the roots of winter wheat, barley and oats penetrate a heavy clay soil and subsoil to a depth of fully four feet. In the same type of soil the roots of the corn plant reached an equal depth. Therefore it is usually deemed advisable to place tiles at a depth of three and a half to four feet. Unless this is done it is impossible to put the soil in the best condition for crop production from the standpoint of circulaion of air, the activity of the soil bacteria and the most favorable moisture conditions.

All sandy and loamy soils are readily drained and rarely present troublesome problems in regard to the depth or distance apart of drains. It is well, however, to note the following facts in regard to the drainage of sandy and gravelly soils. Water percolates readily through sand or gravel, but there are a few cases when such lands require drainage. A basin-like area of sandy soil frequently is found where the surface soil rests upon clay. In such a case adequate drainage is essential aud can usually be secured by the judicious use of a few deep drains. Further, where the top soil is underlaid by a sandy subsoil, tile should not be placed so as to draw the water far down into the sand because in this type of soil the force of capillarity can not carry water upward rapidly but a short distance. We have conducted laboratory experiments which conclusively prove this point and it is one which must not be overlooked in the drainage of sandy soils. Again, if the ground water surface is carried below the limit of rapid capillary movement not only is there a reduction in the amount of ground water available for the crop, but there is also a reduction in the amount of summer rainfall which the crop can make use of, owing to the fact that when heavy rains occur a considerable portion of the water which is thus brought to the soil percolates downward beyond the limit of the root zone before the crop is able to utilize it.

In contrast with the open, porous, sandy and gravelly soils, we have the compact clay through which water seems scarcely to percolate at all. But the fact that the clay has water in it makes it evident that this soil is not really impervious to water and therefore can be drained successfully. About the only soils we may properly term impervious are those which have been puddled. In brief, any soil which has been exposed to air, water and frost, is permeable to water to a greater or less degree and hence we may conclude that the upper stratum of practically any soil will allow water to pass through it to such an extent that a drainage system which has been properly installed will prove effective in time.

Many landowners question the wisdom of tiling tenacious clay soils to a good depth. Our study of this subject leads to the conclusion that there is ample evidence to justify the drainage of even the stiffest clay soils. If time permitted, well known authorities could be quoted to prove that clay soils have been drained with a full measure of success. But we must be content to briefly call attention to one or two important points in this connection.

On very heavy clay lands the tile should not be placed too deep, for the water will not reach it as rapidly as desired. Wherever the water has great difficulty in getting to the tiles because of the tenacity of the soil, and there is little danger of silt getting into the tiles, it is a most excellent practice to cover them with a few inches of small stones and gravel. These materially assist the water in reaching the drain quickly. If the materials named are not readily available, brush, straw or corncobs may be used. A few years ago an Illinois farmer uncovered a number of tile drains which were located in a stiff timber soil. These drains had not discharged any water for several months previous to the time they were uncovered. Corncobs and other coarse material were placed in the newly opened ditches and thereafter the drains discharged freely and greatly improved the tract in which they were located.

Underdrains placed in a stiff clay are more effective the second year than the first and their efficiency usually increases steadily for several years. It is not difficult to understand the reason for this marked improvement. All soils, and especially clays, expand when wet and contract when dry. Therefore, when a clay soil is tile drained, that soil which is freed of a portion of its water becomes dryer than the rest. Then shrinkage cracks are formed in this clay; these cracks extend outward and become longer and longer as the drained and dried areas increase in extent. Naturally these shrinkage cracks serve as drains or openings through which the soil water readily finds its way to the drains. After the lapse of a short time small fissures extend out from the main channels and thus the entire soil mass is divided into small blocks or portions and thereafter this clay which at first was tenacious and impervious to water, or nearly so, presents the most favorable conditions for the ready movement of air and water within its depths. And, again, the roots of plants, such as clovers, deeply penetrate the drained clay soils and when they decay, numerous passageways are left in the soil through which the water readily finds its way to the drains. Thus it is that in a few years after drains have been installed, a stiff clay soil is rendered open and porous and well adapted to the production of crops.

The resistance to the flow of water increases as the soil texture becomes more close. Hence the more open the soil the farther apart the drains may be placed. In loose, loamy soils, and particularly those underlaid by sand, good drainage is often secured with drains one hundred feet apart and sometimes the distance is even greater. Clay is the finest grained soil we have and therefore in this soil drains must be placed quite near each other. Unfortunately, experiments which might aid the engineer on this point, have not yet been carried on. The demand for data relating to this problem is increasing constantly. We trust that in the near future this problem will receive attention from investigators which it merits by reason of its importance. Drainage is an improvement which is too important and expensive to permit of careless and haphazard work. Whenever drains are located too far apart, failure to accomplish the end in view inevitably results. When they are placed too near there is loss of time and money. It is true that so many local conditions affect the distance apart at which drains should be placed that no specific figures can be followed in all cases but the problem will be greatly simplified if landowners and engineers can come into possession of reliable data regarding even a few areas which have been drained economically and successfully.

So far as we have been able to learn, landowners have practically the same problems and the same experiences with gumbo that they have with clay. One farmer states that he tiled a tract of gumbo with the result that the water was removed very slowly the first season. The drain was much more effective the second year and drew the water from a greater distance, and it did still better the third year. Apparently the gumbo was affected by the drain just as the clay described previously. There are extensive tracts of gumbo in Iowa, and doubtless the best methods to adopt in draining soils of this type are those which have been recommended for clayey soils. We trust that landowners and engineers who are present will state their experience with gumbo for the benefit, not only of those in attendance at the convention, but also through the reports for the large number of farmers in the State who are seeking information in regard to the drainage of these lands.

The gumbo soils, to which we refer are loams with sufficient clay mixed with them to make them exceedingly sticky or adhesive when wet. When these soils are properly drained and cultivated they are fertile.

Muck is another type of soil which it is often difficult to drain successfully. This is a black soil, composed largely of vegetable matter and is found in swampy areas. Muck is quite often unproductive because the permanent water level is too near the surface. There are several factors which make this a difficult soil to drain and therefore we refer briefly to some drainage plans which have been found to be well adapted to muck areas. One well known authority says, "In raw muck lands the water will not readily enter a tile, and the water moves through such soil with great difficulty. On the unproductive lands the water level is maintained by some source of water in the surrounding higher ground and reaches the muck soil through a water-bearing sand or gravel layer below the muck. The water moves very readily through the gravel, and if we can devise some plan of drainage by which a portion of the tile will pass through this gravel layer a permanent water level will be reduced to the level of the tile. Whenever this can be done at reasonable expense it is the simplest and most satisfactory solution of the problem."

The recommendation is offered that a preliminary drainage survey should be made when it is proposed to drain a muck soil. Holes should be bored in the muck bed to determine the character of the stratum below the surface and the depth at which it is found. We use for this purpose a one and a half inch auger welded to a piece of one-half inch gas pipe with a T screwed on top to hold the cross handle, which is also a piece of one-half inch pipe. When the distance from the surface to the water-bearing gravel has been determined, by the use of the auger, at several points in the area to be drained, usually it is possible to plan a drainage system which will reduce the permanent water level to a sufficient depth and which will require only a comparatively few short lines of tile in the gravel.

There are cases where water-bearing gravel is found at a depth of forty to fifty feet below a layer of muck which rests upon thirty or forty feet of clay. Whenever such a muck area can not be drained economically in any other way, it is advisable to sink a well three or four feet in diameter through the clay to the stratum of gravel. The well will afford an adequate outlet for the tile system and in this way the basin in which the muck soil is found is adequately drained and rendered productive. When this plan is adopted, care must be taken to lay the tile in such a way that the water can readily enter, but that mud will not be carried into the well.

Experiments apparently show that the permanent water level in these muck soils should be maintained at least forty-two inches below the lowest part of the muck bed.

Numerous peat beds are found in the Wisconsin drift area of Iowa. This type of soil, free from silt and fibrous in texture is often found in strata three feet or more in depth. Peat of this depth is difficult to tile for the reason that when peat beds are drained they shrink greatly in volume. The result is that in a few years' time the surface is lowered to quite an extent and the tile are left too near the surface. King makes the following statement regarding the drainage of peat:

"It is usually better to drain with open ditches, placing them where ultimately they may be deepened and converted into under-drains. The surface ditching will dry out the marsh to a considerable extent, and permit the needed decay and shrinkage of the peat to take place, although several years may be required for this."

We must conclude that there is a great lack of reliable data regarding the drainage of many types of soil. We trust that during the coming year many farmers and engineers will carefully study the relation of the soil to underdrainage and that in future years the results of these investigations may be published to aid in the advancement of drainage improvements.

# NOTES AND TABLES ON DRAINAGE ENGINEERING.

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The weather and soil conditions of the past two years have caused the people of Iowa to realize the need of drainage. Iowa land is now too valuable to be permitted to remain a waste on this account. The question then arises as to the method of securing the desired results.

In the past a considerable part of the drainage work attempted has proven unsatisfactory because done without the services of a competent drainage engineer. The grades and sizes of drains has usually been merely guessed at. To help remedy this the following tables and notes of information have been prepared by the Civil Engineering Department of the Iowa State College:

## TABLES AND EXAMPLES FOR TILE DRAINS AND OPEN DITCHES.

### TABLE 1—NUMBER OF ACRES DRAINED BY TILES REMOVING ONE-FOURTH INCH DEPTH OF WATER IN TWENTY-FOUR HOURS.

| Grades. | | Diameters of Tile Drains. | | | | | | | | | | | Grades. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Per cent | Inches per rod | 3 inch | 4 inch | 6 inch | 8 inch | 10 inch | 12 inch | 15 inch | 18 inch | 20 inch | 22 inch | 24 inch | Inches per rod | Per cent |
| 0.03 | 1-16 | .... | ..... | ..... | ..... | 37 | 59 | 109 | 159 | 205 | 254 | 319 | 1-16 | 0.03 |
| 0.05 | 3-32 | .... | 5 | 13 | 28 | 49 | 75 | 131 | 219 | 264 | 332 | 411 | 3-32 | 0.05 |
| 0.10 | 3-16 | 4 | 7 | 19 | 40 | 69 | 109 | 186 | 289 | 373 | 471 | 582 | 3-16 | 0.10 |
| 0.15 | 9-32 | 4 | 9 | 24 | 49 | 85 | 132 | 232 | 355 | 458 | 577 | 713 | 9-32 | 0.15 |
| 0.20 | 3-8 | 5 | 10 | 28 | 56 | 97 | 153 | 264 | 410 | 529 | 667 | 823 | 3-8 | 0.20 |
| 0.30 | 9-16 | 6 | 12 | 33 | 69 | 119 | 188 | 322 | 502 | 648 | 808 | 1008 | 9-16 | 0.30 |
| 0.40 | 13-16 | 7 | 14 | 39 | 79 | 138 | 216 | 371 | 580 | 748 | 942 | 1165 | 13-16 | 0.40 |
| 0.50 | 1 | 8 | 16 | 44 | 89 | 154 | 246 | 416 | 648 | 838 | 1050 | 1300 | 1 | 0.50 |
| 0.60 | 1 3-16 | 9 | 17 | 48 | 97 | 169 | 266 | 457 | 710 | 911 | 1154 | 1422 | 1 3-16 | 0.60 |
| 0.70 | 1 3-8 | 10 | 19 | 50 | 105 | 182 | 287 | 488 | 768 | 988 | 1242 | 1549 | 1 3-8 | 0.70 |
| 0.80 | 1 9-16 | 10 | 20 | 55 | 114 | 195 | 207 | 526 | 822 | 1059 | 1332 | 1645 | 1 9-16 | 0.80 |
| 0.90 | 1 3-4 | 10 | 21 | 59 | 119 | 207 | 326 | 558 | 872 | 1123 | 1414 | 1747 | 1 3-4 | 0.90 |
| 1.00 | 2 | 11 | 22 | 62 | 126 | 218 | 343 | 589 | 917 | 1176 | 1495 | 1838 | 2 | 1.00 |
| 1.50 | 3 | 13 | 28 | 75 | 153 | 267 | 419 | 722 | 1123 | 1450 | 1824 | 2256 | 3 | 1.50 |
| 2.00 | 4 | 15 | 31 | 88 | 178 | 309 | 485 | 832 | 1297 | 1676 | 2110 | 2594 | 4 | 2.00 |
| 3.00 | 5 15-16 | 19 | 39 | 107 | 216 | 377 | 593 | 1020 | 1589 | 1957 | 2592 | ...... | 5 15-16 | 3.00 |
| 4.00 | 7 15-16 | 22 | 45 | 123 | 253 | 437 | 683 | 1176 | ..... | .... | ...... | ...... | 7 15-16 | 4.00 |
| 5.00 | 9 7-8 | 25 | 50 | 138 | 280 | 486 | 765 | ...... | ..... | ...... | ..... | ... | 9 7-8 | 5.00 |
| 7.50 | 14 7-8 | 30 | 61 | 169 | 344 | ..... | .... . | ...... | ...... | ..... | ..... | ..... | 14 7-8 | 7.50 |
| 10.00 | 19 13-16 | 35 | 71 | 195 | ..... | ..... | ..... | .... | ...... | ...... | ...... | .... | 19 13-16 | 10.00 |

The above table is computed from the form of Poncelet's formula recommended for use with tile drains by C. G. Elliott, drainage expert to the U. S. Agricultural Department, Washington D. C., who recommends the above sizes to drain ground water only. If surface water is also to be removed, as in the case of ponds without other outlets, the tiles will drain safely only one-half to one-third the number of acres given in the table.

When part of the land in the water shed is rolling, not requiring tiling, count only one-third of such rolling land, in addition to all of the low, flat land, in getting the size of tiles to remove ground water only.

Example 1. What size of tile laid to a 0.1 % grade will carry the underdrainage of 160 acres of flat land? Answer 15 inches.

Example 2. What size of tile to a 0.2 % grade will carry the underdrainage of 240 acres, two-thirds rolling? Answer 80 acres flat land plus one-third of 160 acres rolling gives 133⅓ acres requiring a 12-inch tile.

Example 3. What size of tile laid to 0.3 % grade will be required to remove both ground and surface water from a pond whose water shed includes 40 acres? Answer 10-inch. (NOTE.—Double or triple the area for both ground and surface water).

NOTE.—If it is not practicable to use such a large tile as is required to carry a large amount of surface drainage, a broad shallow depression, cultivated or kept in grass, may be maintained alongside of the drain to carry the surface overflow from heavy rains. A 12-inch tile may thus often be used in place of the expensive 15-inch or 18-inch tile.

## TABLE 2—NUMBER OF ACRES DRAINED BY OPEN DITCHES.

Depth of Water 3 feet. Depth of Ditch at least 4 feet.

| Grades. | | Average Width of Water. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Per cent. | Feet per Mile | 4 feet. | 6 feet. | 8 feet. | 10 feet. | 15 feet. | 20 feet. | 30 feet. | 50 feet. |
| 0.02 | 1.0 | ........ | ........ | 725 | 970 | 1570 | 2240 | 5300 | 18400 |
| 0.04 | 2.1 | 400 | 690 | 1000 | 1360 | 2250 | 4700 | 7470 | 26100 |
| 0.06 | 3.2 | 492 | 850 | 1260 | 1690 | 2770 | 5770 | 18400 | 31900 |
| 0.08 | 4.2 | 572 | 980 | 1460 | 1950 | 4820 | 6670 | 21400 | 37400 |
| 0.10 | 5.3 | 636 | 1100 | 1630 | 2180 | 5360 | 7440 | 23700 | 41400 |
| 0.15 | 7.8 | 791 | 1330 | 2010 | 2670 | 6600 | 19000 | 30200 | 52100 |
| 0.20 | 10.6 | 905 | 1560 | 2310 | 4720 | 7870 | 21800 | 35000 | 60300 |
| 0.25 | 13.2 | 1020 | 1740 | 2660 | 5300 | 17500 | 24600 | 39000 | 67700 |
| 0.30 | 15.8 | 1100 | 1970 | 2900 | 5850 | 19400 | 26300 | 42700 | 74000 |
| 0.40 | 21.1 | 1300 | 2290 | 5050 | 6740 | 22200 | 30800 | 49400 | 85700 |
| 0.50 | 26.4 | 1475 | 2559 | 5620 | 7500 | 24800 | 34800 | 55300 | 95200 |
| 0.60 | 31.7 | 1600 | 2790 | 6230 | 16500 | 27200 | 37600 | 60400 | |
| 0.70 | 37.0 | 1720 | 3010 | 6650 | 17800 | 29400 | 41200 | | |
| 0.80 | 42.2 | 1850 | 4850 | 7170 | 19100 | | | | |
| 0.90 | 47.5 | 1955 | 5140 | 7550 | 20100 | | | | |
| 1.00 | 52.8 | 2050 | 5400 | 7980 | | | | | |

## TABLE 3.—NUMBER OF ACRES DRAINED BY OPEN DITCHES.

Depth of Water 5 feet. Depth of Ditch at least 6½ feet.

| Grades. | | Average Width of Water. | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Per cent | Feet per Mile | 6 feet | 8 feet | 10 feet | 15 feet | 20 feet | 30 feet | 50 feet |
| 0.02 | 1.0 | 980 | 1470 | 1900 | 5000 | 7150 | 23800 | 43800 |
| 0.04 | 2.1 | 1390 | 2090 | 2800 | 7200 | 20400 | 33500 | 62500 |
| 0.06 | 3.2 | 1710 | 2560 | 5100 | 17600 | 24700 | 40800 | 75500 |
| 0.08 | 4.2 | 2980 | 2980 | 6100 | 20400 | 30000 | 48800 | 88000 |
| 0.10 | 5.3 | 2220 | 5010 | 7600 | 23400 | 83400 | 54500 | 98000 |
| 0.15 | 7.8 | 2720 | 6300 | 17100 | 28700 | 40500 | 66700 | 120000 |
| 0.20 | 10.6 | 4820 | 7300 | 19500 | 33000 | 47000 | 77000 | 139000 |
| 0.25 | 13.2 | 5370 | 16300 | 21900 | 37500 | 53000 | 86000 | 155000 |
| 0.30 | 15.8 | 5900 | 17900 | 23900 | 40700 | 57000 | 94000 | 170000 |
| 0.40 | 21.1 | 6830 | 20600 | 27700 | 47000 | 67000 | | |
| 0.50 | 26.4 | 7600 | 23000 | 31000 | | | | |
| 0.60 | 31.7 | 16700 | 25200 | 33900 | | | | |
| 0.70 | 37.0 | 18100 | 27300 | | | | | |
| 0.80 | 42.2 | 19000 | | | | | | |
| 0.90 | 47.5 | 20500 | | | | | | |

### TABLE 4—NUMBER OF ACRES DRAINED BY OPEN DITCHES.

Depth of Water 7 feet. Depth of Ditch at least 9 feet.

| Grade. | | Average Width of Water. | | | | | |
|---|---|---|---|---|---|---|---|
| Per cent. | Feet per mile. | 8 feet. | 10 feet. | 15 feet. | 20 feet. | 30 feet. | 50 feet. |
| 0.02 | 1.0 | 2300 | 4700 | 16600 | 28000 | 48000 | 88500 |
| 0.04 | 2.1 | 4850 | 6740 | 23400 | 35400 | 58000 | 106000 |
| 0.06 | 3.3 | 5920 | 17000 | 29600 | 43400 | 72000 | 129000 |
| 0.08 | 4.2 | 6940 | 19100 | 34200 | 50000 | 83000 | 150000 |
| 0.10 | 5.3 | 7720 | 21800 | 38400 | 56000 | 92600 | 167000 |
| 0.15 | 7.8 | 19400 | 27000 | 47200 | 68500 | 112000 | 202000 |
| 0.20 | 10.6 | 22400 | 31300 | 54200 | 78700 | 130000 | 235000 |
| 0.25 | 13.2 | 25000 | 34800 | 60500 | 88000 | 146000 | |
| 0.30 | 15.8 | 27400 | 38200 | 66200 | 96500 | | |
| 0.40 | 21.1 | 31700 | 44100 | | | | |
| 0.50 | 26.4 | 35400 | | | | | |

### TABLE 5—NUMBER OF ACRES DRAINED BY OPEN DITCHES.

Depth of Water 9 feet. Depth of Ditch at least 11½ feet.

| Grade. | | Average Width of Water. | | | | |
|---|---|---|---|---|---|---|
| Per cent | Feet per Mile | 10 feet | 15 feet | 20 feet | 30 feet | 50 feet |
| 0.02 | 1.0 | 6550 | 27800 | 40800 | 69500 | 127000 |
| 0.04 | 2.1 | 18500 | 34400 | 50000 | 83500 | 157000 |
| 0.06 | 3.2 | 22600 | 41600 | 61000 | 103000 | 193000 |
| 0.08 | 4.2 | 26300 | 48300 | 71000 | 120000 | 221000 |
| 0.10 | 5.3 | 30400 | 54000 | 79100 | 132000 | 244000 |
| 0.15 | 7.8 | 37300 | 66100 | 96200 | 162000 | 298000 |
| 0.20 | 10.6 | 42900 | 76200 | 104000 | | |
| 0.25 | 13.2 | 48000 | 85300 | 125000 | | |
| 0.30 | 15.8 | 52500 | 93200 | | | |
| 0.40 | 21.1 | 60800 | | | | |

The tables for open ditches are calculated by the well known Kutter's formula, using a "coefficient of roughness" equal to 0.03. This coefficient of roughness is the value recommended by Kutter for channels in moderately good condition having stones and weeds occasionally. For ditches in first-class condition, the number of acres may be increased 25%. The tables have been calculated for ditches having sides with slopes of one foot horizontal to one foot vertical but are approximately correct for other slopes.

The capacity of the ditches has been made as recommended by C. G. Elliott, U. S. Agricultural Department drainage expert, as follows, the ditches to run not more than 8-10 full for the capacities mentioned:

Above the upper heavy line (tables 2, 3, and 4), ¾ in. depth of water per 24 hours.

Between the heavy lines, ½ in. depth of water per 24 hours.

Below the lower heavy line ¼ in. depth of water per 24 hours.

Local conditions may vary the size needed, and it is necessary to consult a drainage engineer in each case.

Example 4. What width of ditch, having a fall of 5 feet per mile, and a depth of water of 3 feet, will be required to drain an area of 5 square miles (3200 acres)? Answer. About 12 feet.

Example 5. What sized ditch having a fall of 3 feet per mile, and 9 feet depth of water, will drain an area of three townships (69120 acres)? Answer. About 22 feet.

## ADVICE TO LANDOWNERS ABOUT TO CONSTRUCT DRAINS.

1. Employ a reliable drainage engineer to make surveys, and plan your system of drainage. Otherwise you are very liable to throw away part of your money.

2. Require from your drainage engineer a complete map or plat of your drains, showing the exact location, sizes, grades and depths. Remember that your drains will be out of reach (except at much cost and trouble) after they are covered.

3. Make your drains of ample size. Drains which are too small fail when you need them most, in wet seasons.

4. Put your tile down to a good depth. Otherwise they will not draw well to any considerable distance. Make them four feet deep in the lowest ground if possible. The extra cost of good depth is small in proportion to the total cost.

5. Have your drainage engineer inspect the work during construction and test the grades of the drains and see that the work is well done. Many tile become choked with mud because not laid true.

6. Be sure to protect the outlet. Build a bulkhead wall of brick or stone to hold the end. Also use a piece of iron pipe at the end, if tile is not too large, or for large drains use a few feet of sewer pipe cemented.

7. If you are obliged to construct an open ditch, make it at least five to seven feet deep, if possible, to give good outlets for tile, and to avoid choking up.

8. The bottoms of open ditches should be at least three feet wide, and the sides should be given slopes of at least one foot horizontal to one vertical to avoid choking. Dirt should not be piled near the edges of the bank.

## POINTS TO NOTE IN PLANNING YOUR DRAINAGE SYSTEM.

1. Character of the land, as swampy, low, sloping, dry, etc., also retentive or open, depth of surface soil, condition of subsoil, etc.

2. Acreage of various kinds just described, their location relative to drains, etc.

3. The outlet, its character, capacity, depth, protection required for tile, etc.

4. Fall or grade for mains, submains, and laterals, with depth of cutting required.

5. Various expedients, such as the use of cut-offs across necks of land, to save distance and gain fall.

6. Your drainage engineer should be competent to handle these problems.

## ON PROPERTY ASSESSMENTS.

1. Place the highest assessment on the swampy land, next highest on the wet, pasture land, then a small amount on the low land which is tillable but needs tiling, and little or no assessment on the rolling, dry land.

2. The land in the immediate vicinity of the drain is assessable higher than that some distance away.

3. Land near the upper end of the drain is assessed the highest on this point, gradually decreasing to a small amount at the outlet.

## COST OF TILE DRAINS.

The following data show the average cost of tile drains during 1903 in the vicinity of the college. Local markets should be consulted before applying them elsewhere.

| Size of Tile. | Price per 1000 feet. | Weight per foot Lbs. | Cost of hauling 1000 ft. for 5 miles. See Note 1. | Cost of laying, per foot in depth per rod. | |
|---|---|---|---|---|---|
| | | | | See Note 2. | See Note 3. |
| 4 inch | $ 20.00 | 8 | $ 5.00 | 8c to 15c | ............ |
| 5 inch | 27.00 | 10 | 6.25 | 8c to 15c | ............ |
| 6 inch | 37.00 | 12 | 7.50 | 10c to 15c | ............ |
| 8 inch | 58.00 | 20 | 12.50 | 12c to 15c | 25c |
| 10 inch | 85.00 | 30 | 18.75 | 15c to 20c | 25c |
| 12 inch | 115.00 | 40 | 25.00 | | 30c |
| 15 inch | 255.00 | 50 | 31.25 | | 35c |

18-inch tile and larger sizes are "special" at many yards, and prices and weights should be obtained as needed.

Note 1. Cost of hauling is based on expense of $1.25 per ton, two trips per day.

Note 2. This includes digging ditch and laying tile, filling to be done by owner. Price given assumes ordinary work in good soil, the smaller price being for shallow work.

Note 3. This is taken from prices for mains laid in wet soil in large drainage districts. It includes digging, laying and filling.

Example 6. Find cost of a main drain, there being 1500 feet of 15-inch tile, and 1200 feet of 12-inch tile, average depth 5 feet, length of haul allows two trips per day.

Answer:

| | | | | |
|---|---|---|---|---|
| Tile. | 1500 feet 15-inch tile @ | $255.00 = | $ 383 | |
| | 1200 feet 12-inch tile @ | 115.00 = | 138 | |
| | | | —— | $ 521 |
| Hauling. | 1500 feet 15-inch tile @ | $31.25 = | $47.00 | |
| | 1200 feet 12-inch tile @ | 25.00 = | 30.00 | |
| | | | —— | $ 77 |
| Laying. | 91 rods 15-inch tile @ | $ 1.75 = | $160.00 | |
| | 73 rods 12-inch tile @ | 1.50 = | 110.00 | |
| | | | —— | $ 270 |
| Engineering commissioners' fees, etc., (depending on character of work) say 5% | | | | 42 |
| | | | | —— |
| Estimated cost. | | | | $ 910 |

## THE CONTRACT AND SPECIFICATIONS.

It is advised that a definite arrangement be made between property owner and contractor in regard to drain construction, and this should be in the form of a contract signed by both parties. The following specifications and form of contract is taken from Mr. C. G. Elliott's "Engineering for Land Drainage," and is recommended for general use.

### CONTRACT.

It is hereby agreed between............ ....employer, and................contractor, that the said................will construct the following named or described tile drains in accordance with the foregoing specifications, at the prices herein named, and that he will begin the work on or before............and complete the same by ..........

..............................................................................................................

..............................................................................................................

..............................................................................................................

..............................................................................................................

..............................................................................................................

Witness the hands of the respective parties, this............day of..........

................Employer.
................Contractor.

### SPECIFICATIONS.

The lines for the ditches are indicated on the field by stakes which have been set by the engineer, and the depths and grades given by him shall constitute a part of these specifications.

*Digging the ditches.*—The digging of each ditch must begin at its outlet or at its junction with another tile drain, and proceed towards its upper end. The ditch must be dug along one side of the line of survey stakes, and about ten inches distant from it, in a straight and neat manner, and the top soil thrown on one side of the ditch and the clay on the other. When a change in the direction of ditch is made, it must be kept near enough to the stakes so that they can be used in grading the bottom. In taking out the last draft, the blade of the spade must not go deeper than the proposed grade line or bed upon which the tiles rest.

*Grading the bottom.*—The ditch must be dug to the depth indicated by the figures given with the survey, which depth is to be measured from the grade stakes which are set for that purpose, and graded evenly on the bottom by means of the "line gauge method" or "target," or any other equally accurate device for obtaining an even and true bottom upon which to lay the tile. The bottom must be dressed with the tile hoe, or in case of large tiles, with the shovel, so that a groove will be made to receive the tile, and when laid in it will remain securely in place.

*Laying the tile.*—The laying of the tile must begin at the lower end and proceed upstream. The tile must be laid as closely as practicable, and the lines free from irregular crooks, the pieces being turned about until the upper edge closes, unless there is sand or fine silt which is likely to run into the tile, in which case the lower edge must be laid close, and the upper side covered with clay or other suitable material. When, in making turns, or by reason or irregular-shaped tile, a crack of one-fourth inch or more is necessarily left, it must be securely covered with broken pieces of tile. Junctions with branch lines must be carefully and securely made.

*Blinding the tile.*—After the tile have been laid and inspected by the person in charge of the work, they must be covered with clay to a depth of six inches, unless, in the judgment of the superintendent, the tile are sufficiently firm, so that complete filling of the ditch may be made directly upon the tile. In no case must the tile be covered with sand without other material being first used.

*Risk during construction.*—The ditch contractor must assume all risks from storms and caving in of ditches, and when each drain is completed it must be free from sand and mud before it will be received and paid for in full. In case it is found impracticable, by reason of bad weather or unlooked for trouble in digging the ditch, or properly laying the tile, to complete the work at the time specified in the contract, the time may be extended as may be mutually agreed upon by the employer and contractor. The contractor shall use all necessary precaution to secure his work from injury while he is constructing the drain.

*The tile to be used.*—Tile will be delivered on the ground convenient for the use of the contractor. No tile must be laid which are broken, or soft, or so badly out of shape that they can not be well laid and make a good satisfactory drain.

*Payments for work.*—Unless otherwise hereafter agreed upon, the contractor may at any time claim and receive from the employer seventy-five per cent of the value of completed and accepted work at the price agreed upon in the contract. Twenty-five per cent will be retained until the entire work contracted for is completed and accepted, at which time the whole amount due will be paid.

*Prosecution of the work.*—The work must be pushed as fast as will be consistent with economy and good workmanship, and must not be left by the contractor for the purpose of working upon other contracts, except by permission and consent of the employer. All survey stakes shall be preserved and every means taken to do the work in a first-class manner.

*Failure to comply with specifications.*—In case the contractor shall fail to comply with the specifications, or refuse to correct faults in the work as soon as they are pointed out by the person in charge, the employer may declare the contract void, and the contractor, upon receiving seventy-five per cent of the value of the completed drains at the price agreed upon, shall release the work and the employer may let it to other parties.

*Subletting work.*—The contractor shall not sublet any part of the work in such a way that he does not remain personally responsible, nor will any other party be recognized in the payment for work.

*Plan and tools.*—The contractor shall furnish all tools which are necessary to be used in digging the ditches, grading the bottom, and laying the tile. In case it is necessary to use curbing for the ditches, or outside material for covering the tile where sand or slush is encountered, the employer shall furnish the same upon the ground convenient for use.

All plans and figures furnished by the engineer, together with the drawings and explanations, shall be considered a part of these specifications.

### THE NEW DRAINAGE LAW.

The last General Assembly of Iowa has passed a law whereby one or more property owners may secure drainage with proper outlet, etc. The order of procedure is:

1. Make petition to the board of supervisors of your county, designating the general course of the desired drain, lands affected and benefits proposed.
2. The supervisors appoint a competent drainage engineer to make investigation and report.
3. The supervisors consider the report, and if they authorize the construction of the drain, they notify all owners of property affected, setting a time for hearing claims.
4. If all is satisfactory, a commission is appointed to assess the property.
5. The engineer carefully lays out the work and construction proceeds.

A similar procedure may be used for making alterations or improvements.

## SEWAGE SYSTEM FOR THE FARM.

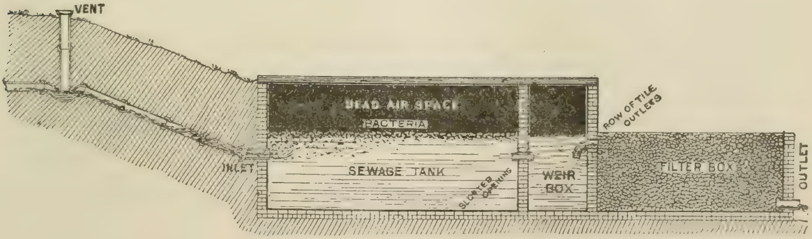
*L. B. Kuhn, in Wallaces' Farmer.*

At many county homes where it is desired to introduce modern improvements in the way of waterworks to supply bath room, closet, sink, and laundry, the disposal of sewage is quite a serious problem. Fortunately it is a problem quite easy of solution by the ''Septic Tank'' system, at once scientific and simple, though but little known. The system can be easily applied in any place where sufficient fall can be secured to carry away the sewage. It is inexpensive, absolutely automatic, and thoroughly effective and satisfactory. It can perhaps be best illustrated by describing a plant now in operation at the Western Hospital for the insane at Watertown, Illinois.

The system is the result of an accidental discovery, and was first put in successful practice by Dr. W. E. Taylor, superintendent of the above named institution, though now being installed at other public institutions in Illinois and attracting much attention elsewhere. That it is perfect in its action may be gathered from the fact that it receives all the concentrated sewage from an institution whose inmates and employes number nearly eight hundred people, thoroughly and completely disposes of all organic, effete and poisonous matter with no residuum or deposit, and the product flows away in a clear sparkling stream of water, ninety-eight per cent pure by chemical analysis when it strikes the air, the remaining two per cent of impurities being liberated on exposure to the atmosphere, leaving a stream of clear water pure enough for any purpose whatever. That this sewage can enter at one end of a tank a foul, offensive stream, reeking with filth, and emerge from the other end a limpid stream of water, actually pure enough to drink, seems wholly incredible, and yet such is the case, and the wonder of it all is that it cleanses itself automatically, without any artificial agency, solely through the work of the filth bacteria preying upon each other. This system works continually, summer and winter, year in and year out, never freezing. It is practically adapted to use in the country at a distance from city sewers, and even for the use of towns and cities is entirely reliable and effective.

At the Watertown asylum the system consists of two oblong tanks of 70,000 gallons capacity each, placed side by side, one tank emptying into the other through a pipe. For all practical purposes, however, one tank with a weir box at one end, is exactly as good as two tanks, as it has been found that the water as it emerges from the first tank is just as pure as after it has passed through the second tank. The object of this wier box is to check the overflow and prevent any agitation of the sewage in the tank.

The tanks in this system are located about a quarter of a mile from the buildings. They might be located forty feet or four miles away according to the convenience, the result would be the same.



The sewage tank as shown in the illustration, consists of a brick box with eight-inch walls and floor, lined within and without with cement. Concrete would make a better tank. The roof is made air tight with a heavy coating of pitch and all crevices are tightly sealed with the same material. The sewer inlet is about two feet below the surface of the sewage in the tank. A short distance from the opposite end of the tank a cross wall is built, having a narrow opening extending across the tank on a level with the inlet. This opening has little if any greater capacity than the inlet. Such an opening causes less current in discharging than would a circular opening. In the end wall is a row of curved tile so placed that the outlets are two feet above the sewer inlet and the opening cross wall. The cross wall forms a weir, or dam, which retards the outflow from the main tank, and of course there can be no discharge until the contents of the tank and weir box reach the level of the curved tile outlets. Thus both inlet and outlet are submerged about two feet below the surface of the sewage in the tank. The filter box is filled with sand and gravel and has an outlet at the bottom through which the water finally discharges.

The operation of this system is simplicity simplified. The sewage entering the tank remains until it fills the tank and the weir box to a level with the overflow from the curved tile outlets. In twenty-four hours or a little over, after entering the tank, a scum will have formed on the surface, an inch or more in thickness, consisting of a solid mass of filth bacteria, which prey upon the poisonous matter and the solids contained in the sewage, constantly fighting among themselves and destroying each other like the Kilkenny cats, which devoured each other until nothing was left but the tail, the tail in this case being represented by the two per cent of poisonous matter left in the water as it escapes, and which is at once eliminated upon exposure to the atmosphere.

Light and air are fatal to these bacteria, hence the necessity of keeping them in a dark, air-tight place that they may accomplish their work. For this reason the tank must be air-tight. Again, to do their work effectively, they must be left in perfect quiet, hence the inlet and outlet are submerged below the surface in order that from inflow and outflow as little current as possible may be caused, and this quiet is further assured by means of the weir box.

Upon emerging from the tiles the water is clear as crystal, and by chemical analysis contains but two per cent of bacteria that would be in the slightest degree injurious to the human system. This water is allowed to filter through the sand and gravel, its exposure in this manner to the air destroying all remaining bacteria, so that it emerges from the final outlet absolutely pure.

Knowing its source, one would not care to drink it, though it is pure enough for this purpose, and stock may drink it with perfect safety.

A system of this kind will not freeze in winter, as the gases arising from the sewage in the tank generate enough heat to counteract the cold and prevent freezing. The water as it emerges will be found much warmer than the air, in cold weather.

In cases where the sewage discharge is scanty and intermittent there might be danger of the water freezing in the filter box during a long cold spell, and then it would be advisable to erect a small tight building, well protected from frost, over the whole outfit, including both tank and filter, but when the sewer is in constant use this would be unnecessary.

The secret, if secret it may be called, of the whole system is the dark and air-tight tank, the submerged inlet and submerged outlet, and that is all there is to it. The bacteria will do their work if let alone. If stirred up they refuse to perform as desired. When properly working the tank might be opened, the bottom scraped and not a handful of solid matter be found.

The tank should be large enough to hold all the sewage that is ever likely to run into it within a period of twenty-four to thirty-six hours. For a private residence this would rarely need to be larger than three feet wide, six feet deep and eight to ten feet long.

# IMPORTANCE OF DRAINAGE IN GOOD ROADS CONSTRUCTION.

*Address of Professor A. Marston, Dean of Division of Engineering, Iowa State College, Before the Iowa State Drainage Convention, Ames, Iowa, January 13-14, 1905.*

It gives me pleasure to have the privilege of addressing this audience tonight upon a subject so important to good roads as that of their drainage. It is almost impossible to exaggerate the importance of the good roads problem to Iowa, as all the business of our agricultural interests must be transacted over these roads and hence upon their reliability and condition all the prosperity of our State depends to a close degree, and not only our prosperity but our progress in intellectual and social lines.

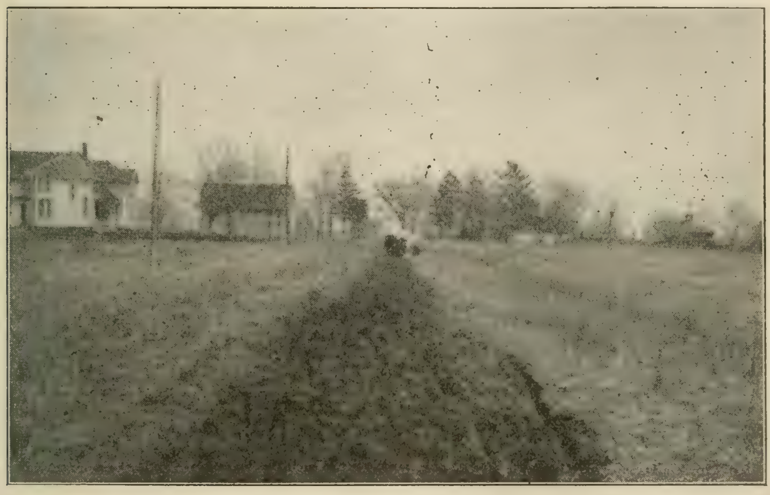


**Fig. 1.—Badly Drained Earth Road Near Cedar Rapids, Iowa.**

This road was practically impassable at the time and is a fair sample of many Iowa roads in the spring.

By act of the last legislature this college was made the State Highway Commission of Iowa, and by action of our board of trustees, the work of this commission has been entrusted to Dean C. F. Curtiss, of the Agricultural Division and to myself as dean of the Engineering Division. Mr. T. H. McDonald has been employed to take immediate charge of the work, and Prof. C. J. Zintheo has assisted from the side of good roads machinery.

The importance of the road problem in our State may be understood further when I say that we have about one thousand miles of country roads, for the care and improvement of which we now raise and expend over three million five hundred thousand dollars per annum. The traffic over our country road amounts probably to about fifty-five million miles of heavy hauling and to three hundred and fifty million miles of other travel per annum. The cost of this traffic to the State, based on common wages, would probably be between forty and fifty million dollars per annum.

In our study of the good roads problem in Iowa we find nothing of greater importance than the proper drainage of the roads. Figure 1 is a view showing a poorly drained earth road, and illustrates the fatal effect or poor drainage. In fact, good drainage may be considered the first essential in the construction of good roads. No matter how impervious any kind of soil may be, we would find by pouring water upon it that it has capacity to absorb a very large percentage of water. The presence of water in excess in soil changes it to a soft and even semi-liquid condition in which it is incapable of supporting loads. Removing this water will put ordinary soils into good condition to carry loads. In fact, during considerable portions of each year, when the weather is dry, our earth roads are in very excellent condition.

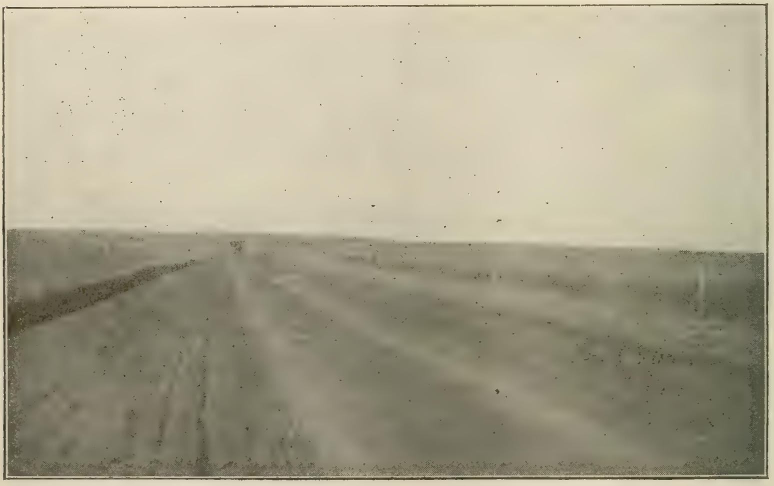


**Fig. 3—View Illustrating Well Graded Earth Road in Carroll County, Iowa.**
Note the crowning of the road and the well constructed side ditches extending with a continuous grade to the river in the distance.

To secure proper drainage of any road three systems of road drainage must be provided, which may be respectively designated, subdrainage, side-drainage, and surface drainage.

*Sub-drainage.*—A good foundation is absolutely essential to the construction of a good road and a good foundation can not be secured where the soil on which the road is built is in a wet, miry condition. In Carroll county a road has been built across a low stretch of land, which has been repeatedly covered with gravel at considerable expense with the result that in a short time the gravel disappeared and the road resumed its wet condition. Under such conditions the only proper remedy is to sub-drain by lines of tile laid on one or both sides of the road, according to circumstances.

In many instances in some sections of Iowa we find it necssary to construct roads through ponds. In such cases the only proper method to be pursued is to drain the pond. Capillary action is capable of lifting water to a considerable distance and if the base of a road grade is constantly saturated with water the result is usually fatal to the road. I have in mind one instance in a neighboring county where the supervisors had expended several hundred dollars in grading through such a pond with the result each time that the grade in a few years became useless. They then proceeded to expend two hundred dollars in draining the pond, and now have an excellent road. There are almost innumerable cases in Iowa where the same remedy would bring about the same results.

*Side-drainage.*—In road construction the aim should be to force all rain water which falls upon the surface to flow immediately away from the road to a satisfactory outlet. Hence, channels must be provided to carry the surface water. These channels should consist of two ditches, one each side of the traveled road.

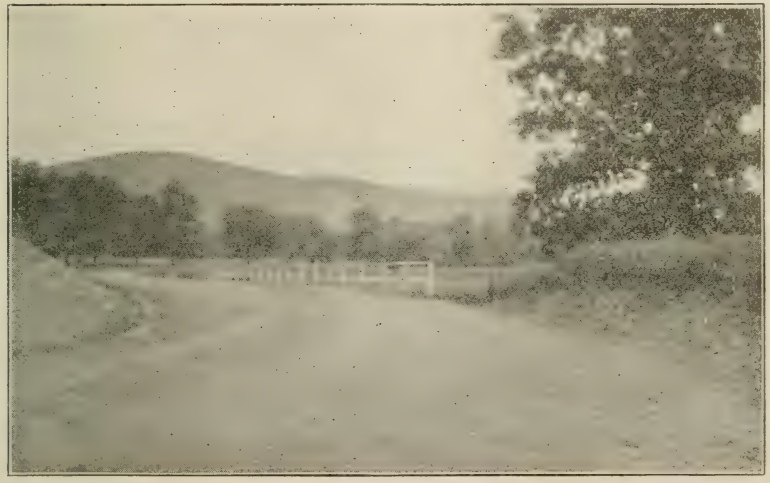


**Fig. 4—View Showing State Aid Macadamized Road in New York State Exhibiting Crowning of the Road and the Side Ditches Constructed to Regular Grades.**

Immediately after heavy rain.

In our own work we consider it better to slope the side of the ditch next to the road gradually so as to avoid the danger of accidents from vehicles overturning.

Figure 3 shows a properly graded earth road as constructed in Carroll county. The shape of the ditches is about what we consider best. Every road should be provided with such a ditch on each side in cuts as well as in surface construction.

These side ditches should always be built to continuous grades to satisfactory outlets. In many cases we note that this principle is not properly carried out and the side ditches serve as a series of ponds to retain the surface water. We believe surveys should be made of every road and profiles constructed, giving the grades not only of the center lines of the road, but also of the side ditches. In the low points of the ditches outlets should always be provided so that water will not stay in any part of the side ditch.

*Surface-drainage.*—Figure 4 also illustrates the crowning of a properly constructed road to throw the surface water to side ditches, and figure 4 is a view of a macadamized road in New York State also illustrating the proper form of side ditch and crowning of the road. Our advice is that on earth roads this crowning should be about one inch per foot. In the original construction of any road the crown should be made greater than is considered permanently necessary, for the tendency is for the road to wear flat.

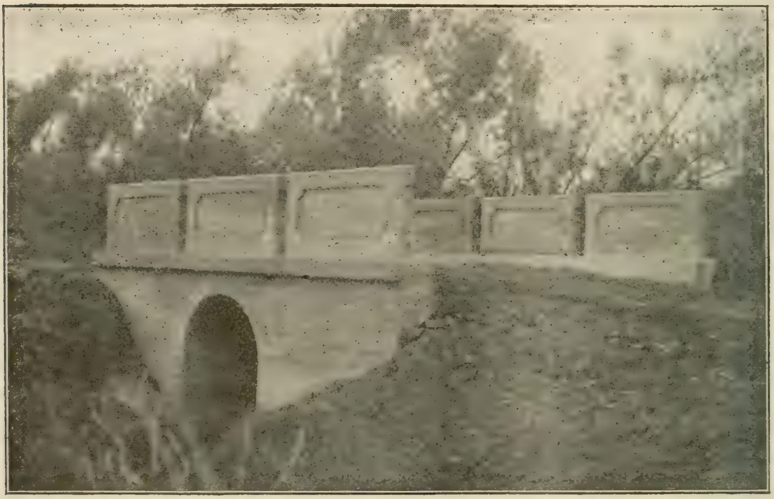


**Fig. 6—Reinforced Concrete Arch Culvert, Greene County, Iowa, Span Five Feet.**

In the maintenance of our earth roads the principal trouble with a properly constructed road is in maintaining proper surface drainage. During and immediately after the rains the surface of the road cuts up from the horses' feet and the wheels so as to make a series of local depressions and ruts which retain the water. From these ruts and depressions it soaks into and softens the road until the well-known muddy and impassable condition results. In the case of earth roads which are not provided with any permanent covering this can not be wholly avoided, and can only be kept within reasonable bounds by constant care in maintenance. The maintenance of an earth road should be directed to maintaining the crown, keeping the road surface smooth and the side ditches open. Whenever the road gets in rough condition it should be gone over with a harrow, a steel rail, or light scraper so as to reduce the lumps and again make it smooth enough to shed water.

*Road culverts.* Another important feature of road construction is that of the culverts. Heretofore the rule has been in this State to construct temporary structures of wood and large amounts of our road funds have been wasted in this way. The price of lumber is constantly getting higher, while, on the other hand, the cost of cement is constantly decreasing and the time now seems ripe for the construction of permanent culverts of masonary, even on our earth roads. While the first cost is greater these masonary culverts should be practically indestructible and they are very economical in the end. In this State we, as the State Highway Commission, are preparing standard plans for concrete-steel culverts for free distribution. Some of the model culverts which we have built are now being tested. In this work we are co-operating with a committee of the American Society of Civil Engineers and other prominent organizations which are now making a sytematic series of tests of reinforced concrete and which has assigned the culvert question to us.

By reinforced concrete with steel we greatly increase the strength and diminish the amount and cost of concrete required for the culverts. Figure 6, which is of a five-foot arch culvert near Jefferson, in this State, shows what a handsome structure can be built in this way.

Such bridges can now be built with perfect safety up to thirty feet of span. At Waterloo, in this State, there are two twenty-four-foot spans on the principal street of the city.

There is a concrete-steel highway bridge built across Hardin Creek, near Jefferson, Greene county, in this State. These structures cost more in the first place than the ordinary steel truss but are much more durable and economical in the end. The concrete-steel bridge at Waterloo cost no more than the heavy steel structure which was considered necessary for the same location.

In conclusion I would say that there is a very intimate relation between the road drainage problem in Iowa and the general drainage problem. To obtain satisfactory drainage for our roads outlets are necessary, which can only be secured through co-operation between the road officers and the owners of adjacent private property. In such cases it will pay both the road officers and private owners to co-operate in securing satisfactory drainage outlets. Each should pay a fair proportion of the cost. Our laws should be amended so as to give road.officers the right to construct outlets, distributing the cost in proportion to the benefit where satisfactory agreements can not be reached. I do not believe that this could be open to any constitutional objection.

## DRAGGING ROADS.

*Wallaces' Farmer.*

If a man has a drag there is no better use to which he can put his time when the roads begin to dry off and the ground is still too wet for corn planting than in simply dragging the road in front of his farm. This idea apparently originated in Missouri, and we notice that our Missouri county papers are dropping into poetry, a sure sign that the farmer is taking hold of it. For example, the *Paw Paw Bazoo*, under the head of "Drag, Brother, Drag," has the following.

If your road is soft or rough,
  Drag, brother, drag;
Once or twice will be enough,
  Drag, brother, drag;
Wheels won't sink into a rut,
Every time you strike a cut,
Teams won't worry if you'll but
  Drag, brother, drag.

'Twon't take long to fix your road,
  Drag, brother, drag;
If you'd pull a bigger load,
  Drag, brother, drag;
It means dollars in the end,
Saved on teams and wagons, friends,
So to this your best ear lend—
  Drag, brother, drag.

The *Republican Press*, of Butler, Missouri, takes up the strain as follows:

And "if at first you don't succeed,"
  Drag, brother, drag;
And once or twice don't fill the need,
  Drag, brother, drag;
When a shower of rain has passed,
And the sun shines out at last,
While the roads are drying fast,
  Drag, brother, drag.

Every time you drag the road,
  Drag, brother, drag;
The lighter to your team the load,
  Drag, brother, drag;
It will pay you ever time,
Just to see your horses smile,
As they quickly trot a mile.
  Drag, brother, drag.

And "Gabe" will come along and see,
  Drag, brother, drag;
Just how a good road ought to be,
  Drag, brother, drag;
When he gets home he'll take his pen,
And write you up the best of men,
And you'll be mighty famous then (?)
  Drag, brother, drag.

Next to underdraining and grading, we put dragging in point of importance. It is the rounding out and completing process. After we have drained, graded, and dragged for three or four years we will then be ready for gravel or other hard covering where the material is available.

## THE ROAD PROBLEM.

*Jas. Hearst, in Wallaces' Farmer.*

Each age has its own problems to solve. When I came into Iowa forty years ago the things demanding our most serious attention were how to get food and shelter for the growing family, and what was true of one family then was true of the entire community.

Those pioneer days have passed away and new things claim our attention. Today railroad discrimination, rebates and combines, extortion of coal barons, Standard Oil infamy, the balanced ration, baby beef, and how to raise it, the doctrine of heredity, and its function in the process of reproduction in both vegetable and animal life, are some of the things that confront the thinker on these opening days of the new century.

Among other things the highway and how best to make it, is one of the burning questions of the hour. In discussing the subject of good roads and how to make them we must take note of the conditions and environments that surround us. In a large part of our State we have very little available gravel suitable for making highways. The sand along our creeks and rivers is too fine to be of any large value, and if it was good there is not enough of it to apply on a very large per cent of our roads. Crushed limestone for many localities is an unattainable article, and when used is far from being an ideal macadam.

Our soil when wet and subjected to travel works into mud, the depth determined by the character of the subsoil. I have in mind one of the streets of my own town that was last spring fenced off from travel; and a strip of road from Grundy county over which no travel was done for a number of weeks. These places have a clay quicksand subsoil and last spring became simply impassable.

Now what is the remedy? Did you ever see any better roads than we have had for the last four or five months? We all know the reason. There has been no rain to wet them up, and nobody ever saw finer highways than we have enjoyed this last fall and winter. Nature in this case did a fine job and if we make a large success in the same direction we must imitate her. In other words, get the water out of our roadways. Well, somebody says, how are you going to do that; and now that is part of the question I wish to answer.

But first please let me give you a little of the philosophy of underdraining. The function of the tile is to remove the surplus water from the soil. As the moisture is withdrawn from the ground the first part to become dry is the top, and as the process goes on if no more water is added at the top finally all the moisture above the tile is removed. These are facts which nobody will think of contradicting, and as we accept their truthfulness let us apply their action to a piece of bad highway. We go in about ten feet from the ditch on one side of the road and put in a course of three-inch tile not less than three feet deep, and then go to the other side of the road and repeat. This in a sixty-four foot road brings the tile something like forty feet apart, and the middle of road between them. Right here is where these tile get in their beneficient work. As soon as the ground freezes in the fall these underground drains continue to draw moisture from the road bed and as no more water is able to penetrate the soil through this frozen covering till spring thawing takes place the result is a thorougly drained road bed and by virtue of the very dry condition in which this ground is in the water that finds its way into the soil at the time of the spring thaws is very soon taken care of.

Permit me to relate an incident which took place on my farm near Cedar Falls last spring. I have a small pasture forty rods wide and sixty-five long. This field has a low place running across each end about fifteen rods from the ends and both have tile clear across the field, discharging into the highway adjacent. Last spring just as the snow was going off and before the ground had thawed clear out we took the broad tread wagons and hauled seventy-five or eighty loads of manure from the cow harn and spread on this pasture. This stuff was as wet as such manure usually is in the spring when the pile thaws out. I think most farmers are posted on this point. In coming into this field we drove in at the ends and crossed the lines of tile at right angles. The ground at this time being thawed out a short depth, as soon as we struck the field the wheels of the wagons sunk into the sod from one to three inches till we came to within forty or fifty feet of the drain, then the ground began to hold up the wagons till they were over to the other side, when they went down again. A week after we had finished the job you could not tell where the wagons had crossed the tile, but the deep wagon tracks were still in the other ground last fall. I think they are there yet.

We had a piece of road some thirty rods long a mile or so out of town that three years ago was simply impassable. It had a clay quicksand subsoil, and when the spring thaw took place the bottom fell out. Two years ago Mr. Phelps, overseer of highways for that district, put in a course of tile right in the middle of the road. I passed over this highway last spring when the thaw was at its worst and this piece of ground was dry and fine while the other parts of the road were one continuous mudhole.

Give me a free hand in putting in tile with a good outlet and I would like to see the piece of highway that I could not make passably passable. I am told that two courses of tile would be very expensive. Let us examine the cost of what I am pleading for and what the roads have cost us under the old regime. The piece of road eighty rods long I spoke of in the first part of my paper, running from Grundy county to Cedar Falls, has been under improvement more than thirty years to my certain knowledge, and in the meantime there has been expended in work thousands of dollars. Last spring the only passable part of this road was a stretch of about twenty rods which had been tiled the previous year. Now at a cost of one dollar per rod, which is a large estimate for labor and tile, we would have expended two dollars per rod, which is a mere bagatelle to what has been spent on this stretch of road. Our overseer of highways has completed the tiling of this roadway, graded it up and now we think that the problem of this slough of despond is solved.

# MISCELLANEOUS.

## COMMERCIAL GRADING OF CORN.

*Geo. A. Wells, Secretary Iowa Grain Dealers' Association, Before the State Farmers' Institute, December 14, 1904.*

It is often and truthfully said that ''Corn is King'' in Iowa. The saying is prompted, no doubt, by the fact that more acres of Iowa land are annually planted to corn than any other grain, the comparative acreage planted being about as follows, to wit: Corn, nine millions; oats, four millions; barley, one-half million; wheat, three-fourths of a million; rye, one hundred thousand.

A king is supposed, however, to have the blue blood of aristocracy coursing through his veins. His personality should consist of quality as well as quantity, and there are, no doubt, many who do not appreciate the wonderful qualities and numerous constituent elements possessed by ''King Corn.''

''King Corn'' was perhaps the first civilized inhabitant of this country. Columbus found him being cultivated by the Indians, and his original existence in a wild state is said to be unknown.

This basin formed by the Missouri and Mississippi rivers, a territory including the States of Kansas, Nebraska, Iowa, Illinois and Indiana, was probably the native home of ''King Corn'', and certain it is that within this territory, about nine hundred miles long by six hundred miles wide, corn has reached its highest type of development and within this limited area is produced about three-fourths of the corn crop of the United States, and one-half of the crop of the world.

There are few plants of which the uses are more various, and few of greater importance to man. Corn is said to furnish food to a larger part of the human race than any other grain except rice.

There are many varieties of corn which differ more among themselves than any other cereal, and it has a remarkable tendency to mix and the different varieties pass into each other by every form of gradation, while the grain from all is similar in chemical composition and thus it is that it responds most promptly to intelligent breeding, and by the process of scientific breeding corn may yet become adapted to climates where now it does not grow, and also be bred to produce an increased quantity of a particular element such as starch, oil or sugar.

The wonderful character of corn is shown by the fact that there are about one hundred and fifty different by-products of the Glucose factories and distilleries, several of which are staple commodities, such as sugar, starch, oil, rubber, etc., and experiments have demonstrated that corn may be bred to increase or decrease a particular element such as oil, of which corn contains more than any other grain, varying from three and one-half per cent to nine and one-half per cent in quantity and we may readily understand that corn containing nine and one-half per cent of oil is much more valuable for certain manufactures, also food for fattening, than if containing only three and one-half per cent.

My purpose in making this brief general statement regarding the constitutent elements of corn is to emphasize the point that there is a wonderful possibility for the future of this grain when we consider the limited area in which it may be grown, and the many and increasing uses of its by-products, and also to suggest the possibility that within a few years the farmer and the grain trade may be forced to discriminate more technically regarding quality and that values will be more in line with the intrinsic worth of the chemical parts.

Corn is one of the most important grains of commerce and its distribution is world wide. The farmer delivers his corn to the trade in all different types, varieties and conditions imaginable, all of which must be considered in fixing its commercial value.

The commercial value of corn is not always based on its intrinsic value as food for stock or its use in the manufactures and this can not be accomplished until some practical chemical test is made use of to determine the constituent elements in the grain.

There are market conditions that affect the relative values of the different grades because of speculation, and also the question of facilities for handling, storing and transportation. When a "corner" is being manipulated by speculation there is always a stronger demand for the contract grade which is No. 2 corn, than for the inferior grades and the difference which under normal market conditions may be one or two cents per bushel may widen to twenty-five cents or even more.

To illustrate this, on July 11, 1902, during the Harris-Gates corner, number two, or contract grade corn, sold at eighty-eight cents in stores at Chicago, while number three corn sold at seventy-three and one-half cents, a difference of fourteen and one-half cents per bushel, while the difference based on feeding and manufacturing, or normal market values would perhaps not have exceeded two cents.

When markets are glutted and the supply exceeds the demand, the corn must necessarily go into store and the buyer of such corn will certainly select only the corn that is thoroughly dry and sound, while the lower grades would be neglected and thus under such circumstances the difference in value between grades would be more than if normal conditions prevailed. However, with the modern machinery for drying corn this is not now so apt to occur, depending on the facilities in the particular market in which the corn is located for handling off grades and the general outlets.

Low grade corn that is liable to get out of condition and is located in a market where there are no cleaning houses or drying facilities would suffer a greater discount than if located in a market with larger facilities and likewise larger demand.

The business of "mixing and drying" grain is an important element in the terminal grain trade and large elevator plants are devoted to that branch of the business and it will be readily understood that for this purpose there is always a varying demand for the different grades that affects comparative values as between grades thus briefly stated, speculation, conjestion at terminals mixing and drying affect values regardless of the intrinsic worth of the grain and it is along these lines that the grain business assumes the character of a profession and of which the successful grain merchant must have some knowledge, otherwise his business is merely that of a freight handler at a railroad station, and his income scarcely more than common wages.

The commercial grading and inspection of grain is one of the most difficult problems with which the grain trade has to contend, and in the absence of a tehnical chemical test it becomes necessary to depend upon individual judgment, based on certain rules regarding color, purity and dryness.

Inspection rules of different markets are not uniform; the same named grade may represent different qualities of grain in different markets, and also different qualities in the same market in different years, a matter that is inconvenient and confusing to the trade. The National Grain Inspectors' Association, in connection with the National Grain Dealers' Association, have attempted to establish uniform grades for all markets, but it seems hard to accomplish for various reasons. Grain inspection in Minnesota, Illinois and Missouri is under State supervision, which is synonymous to political supervision. A bill was presented to Congress during the last session to provide for the establishment of Federal supervision of the inspection of grain, but was defeated. Government supervision is not considered favorably by the grain trade and is not practical, because such a system would be too unwieldy to meet the constantly changing conditions that arise in the inspection of grain, besides being subject to political abuses.

The following are the rules of the Illinois State Grain Inspection of corn, to wit:

No. 1 Yellow Corn—Shall be yellow, sound, dry, plump and well cleaned.

No. 2 Yellow Corn—Shall be three-fourths yellow, dry, reasonably clean but not plump enough for No. 1.

No. 3 Yellow Corn—Shall be three-fourths yellow, reasonably dry and reasonably clean, but not sufficiently sound for No. 2.

No. 1 White Corn—Shall be sound, dry, plump and well cleaned.

No. 2 White Corn—Shall be seven-eighths white, dry, reasonably clean, but not plump enough for No. 1.

No. 3 White Corn—Shall be seven-eighths white, reasonably dry and reasonably clean, but not sufficiently sound for No. 2.

No. 1 Corn—Shall be Mixed Corn, of choice quality, sound, dry and well cleaned.

No. 2 Corn—Shall be Mixed Corn, dry and reasonably clean, but not good enough for No. 1.

No. 3 Corn—Shall be Mixed Corn, reasonably dry, and reasonably clean, but not sufficiently sound for No. 2.

No. 4 Corn—Corn that is badly damaged, damp or very dirty, shall be graded no higher than No. 4.

Corn that is wet or in heating conditions shall not be graded.

You will note that there are three general divisions as to color, to wit: White, yellow and mixed, and each of these are divided into grades, numbered one, two and three, in addition to which there is a grade of number four applying to all damaged corn as stated.

The grades number one white, number one yellow and number one mixed are never used.

The grades number two of white, yellow and mixed are the contract grades already referred to, the only grades deliverable on future contracts and may be called in a sense the speculative grades.

The grades number three includes a larger portion of the corn inspected and is in fact the standard commercial grades of the Western markets.

The total inspection of grain at Chicago for three years 1901-2-3 shows percentage of each grade as follows, to wit:

| | |
|---|---|
| Number 2 corn | 9% |
| Number 3 corn | 67% |
| Number 4 corn | 21% |
| No grade | 3% |

It is a well known fact that Iowa corn does not average as high grade as Nebraska and Illinois, consequently we must conclude that Iowa corn does not hold up to the average shown by Chicago inspection as Nebraska and Illinois contribute largely to the receipts of that market.

I have referred to number two corn as the speculative grade, by which I mean that a buyer of contract corn for future delivery (Board of Trade options) may demand delivery of number two corn and can not be compelled by the rules of the Chicago Board of Trade to accept a lower grade on his contract, and it can thus be understood how it may be considered possible to ''corner'' number two corn when only 9 per cent of the receipts at Chicago for three years, grade number two, even though there may be a large amount of lower grade corn in the country.

The inspection rules take into consideration three distinct conditions, to-wit: color, moisture and purity. The color and purity of corn is plainly apparent, and an actual count of kernels would determine quite accurately the grading in that respect, so far as the rules given are concerned.

The moisture content of corn is not so easily determined, and the term ''reasonably dry'' as given in the rules is rather indefinite and uncertain. There is a large amount of corn that is close on the line between grades and with such indefinite terms as ''reasonably dry'' and ''reasonably clean'' an inspector may through indifference or dishonesty do a great injustice.

New corn even though of high grade in other respects may miss grade because of excessive moisture, as to illustrate, the inspection of corn at Chicago for seven days November 15th to 22d last was as follows, to-wit:

Number 2, 18 cars or ½ of one per cent.
Number 3, 395 cars or 12½ per cent.
Number 4, 1381 cars or 43 per cent.
No grade, 1413 cars or 44 per cent.

You will note that eighty-seven per cent of this corn marketed in November graded number four and no grade principally, because of excessive moisture and it was even in worse condition during the previous days.

The discounts in value at terminal markets on this corn was large and grain dealers have suffered heavy losses in many instances, on corn this season because of their discounts. In fact the terminal grain dealers did not want it unless at a heavy discount.

I know of an eight thousand bushel lot of average corn that was shelled and run through a dryer in November and the shrinkage in weight amounted to a cost of five cents per bushel to say nothing of the labor.

Under ordinary conditions corn containing not more than twelve or thirteen per cent of moisture at the beginning of the warm weather following its maturity will carry or store safely, but new corn, that is soon after maturity, frequently contains twenty to twenty-two per cent of moisture and if not given opportunity to dry out during the winter trouble will result when warm weather comes in the spring and induces fermentation.

There is much corn inspected that contains moisture in quantity close to the danger line and a difference of two or three per cent may determine whether the corn will keep for any particular length of time.

The grain inspector of today simply depends on his sense of feeling to determine the moisture content of corn and it may be readily understood that with the chances of good or bad judgment on the part of the inspector, together with the latitude allowed by the terms in the rules of "reasonably dry," there is a possibility of quite a variation in the inspection.

The question may suggest itself as to why corn can not be inspected on the basis of its constituent parts by a chemical test? Any inspection that would be practical must be rapid, otherwise the system would be cumbersome and expensive, as grain can not very well be held on track at terminal markets for a time sufficiently long to make a chemical test by the methods of today.

Carl S. Schofield of the Department of Agriculture at Washington a year or two ago perfected an apparatus for determining the moisture content of grain, but I understand its use was valuable only in educating the inspectors to judge the moisture content by the sense of feeling.

The grading and inspection of grain bears a closer relation to the terminal business in the buying and selling for future delivery than to the country grain dealer or farmer as a large part of the grain goes forward from country stations on consignment and is sold by sample on its merits and the inspection of such grain is not considered in the transactions.

Buying, storing and shipping corn of excessive moisture content is a hazardous business. It readily absorbs moisture in transit and the losses sustained by grain dealers especially when there is delay in transit is something enormous.

Two or three years ago there was a large southern demand for corn and the corn in this territory contained an excessive amount of moisture. Grain dealers, however, shipped freely to St. Louis, Memphis and othern southern markets, the corn was refused by the purchasers and the only chance was to forward it to New Orleans where hundreds of car loads went to the dump and the shippers required by the railroad companies to remit the freight.

Corn has a peculiar trick of deteriorating in transit and becoming worthless at destination, and a dose of that kind of medicine is not a very good appetizer for a grain dealer.

There is great need of a more technical system of grain inspection although market conditions will undoubtedly continue to effect the spread of values as between grades, regardless of values based on chemical contents.

Volume is an important element in the grain business, and a particular grade or quality of grain must be offered in a volume sufficient to make the handling of it in its indentity consistent and practical before it will be thus recognized by the trade.

Number two corn is unknown in the grain trade in Iowa today simply because of that reason, while if possibly twenty-five per cent instead of less than nine per cent of the corn in Iowa was number two the grain trade would then be forced to recognize the grade and the farmers would receive an additional one half to one cent per bushel and at times much more.

A more definite system of grain inspection would certainly be a great benefit to the grain trade and prevent much of the misunderstanding that now occurs between the grain dealers and the farmers.

## FARMERS ELEVATORS AND CO-OPERATIVE COMPANIES.

*L. T. Barringer, Before the Palo Alto County Farmers' Institute.*

In presenting to you a few thoughts on the subject of farmers' elevators, I will say that, elevators are built to facilitate the unloading of grain from farmers wagons and loading it again into cars for shipment. They are a modern necessity in the handling of grain. My subject, however, does not deal with these buildings, but rather with such principles as I believe will enable farmers to more intelligently do the marketing of the products of their farms, hence, my line of thought will be somewhat different from those usually discussed in meetings of this kind.

Not a few of the friends of the farmers' elevators believe that they see in this movement the first step, the A B C, or introduction of modern business methods in the selling of their farm products. They believe these elevators will be built in every town all over the grain producing sections of the west; that they will unite into State associations, and these again into a National association; that through this organization they will determine the true average cost of products; that they will then weigh, grade and price their goods to buyers the same as sellers of manufactured goods weigh, grade and price their goods to us. In other words, farmers will do business as other men do.

My efforts today will be to show by comparison and various forms of reasoning that the plan is a feasible one; that it would work to *benefit*, not only the *farmer*, *but all* classes of society, and that its realization in the near future is not only possible but altogether probable. You all understand that society, taken as a whole, is composed of many parts, something like a mill or a machine; that no industry or branch of society is independent or complete within itself, but that men in all classes, and in every occupation, are dependent, one upon another, and by reason of this fact anything that works to injure any branch of society must necessarily work an injury to society as a whole, and from this standpoint we shall endeavor to treat our subject.

Farmers as a whole believe that the laws of supply and demand somehow work to govern the prices on all kinds of products. Now, I wish to advance the thought that if this view is correct we farmers ought to become familiarly acquainted with the workings of this law. Senator Tillman told the cotton growers of the South a few days ago that the laws of supply and demand were not operating at the present time with reference to cotton. Now if this law can cease operating for a time it has the power to cease for all time, that is, go permanently out of business.

We are not here today to take anyone's say so, but to think for ourselves, so we will analyze this law of supply and demand and find out for ourselves, if we can, what it does do and what it does not do. First we find that the farmer and his farm is the source of supply of all farm products. We next find that the farmer, and not his farm, represents the intelligence on the part of the supply. Next we examine the demand, and we find that it comes from and means the consuming public. We also find that the demand for food comes from the stomach, that the feet demand shoes, the body clothing, and so on. Next, that the demand of the stomach for food and the feet for shoes does not indicate that the stomach and feet have any more knowledge of value than the farmer's land has knowledge of values. We find that the only intelligent factor on either side lies in the brain of the farmer on the side of supply, and the brain of the consumer on the side of demand; or that the only intelligent factor on either side lies in the mind of the people. How do these two classes make one single effort to determine the true and equitable value of exchange? Does the farmer say one word about what he shall receive, or the consuming public about what it shall pay? Is it not a fact that both sides leave this important matter wholly in the hands of a few men who make a business of gambling in values on the boards of trade; men with but one object in view, viz: that of personal gain? Every human mind possesses the faculty of reasoning. This is not a chance world; there is an adequate cause for every result. What society needs first is a sufficient quantity of raw material; second, that this raw material be made up into usable goods. Farmers furnish the bulk of this raw product. With the improved machinery of today they are producing enough to satisfy every need of man; and when they harvest these products they carry them to their nearest market town and turn them over to society without any apparent thought as to what relation the price they receive bears to the price that they must pay to obtain back a portion of the same products in a manufactured form. I want to ask, can you by any manner of reasoning justify this practice? When this raw material passes through the machinery of some factory it returns to the public market in the form of made up goods, and it is then that we find that the manufacturers' and farmers' methods of selling are not alike. The manufacturer first charges up the cost of the raw product; to this he adds pay for every hour of labor, whether performed by man, woman or child; he then adds a sum sufficient to keep his plant equipped in an up-to-date working condition; then comes taxes, insurance, interest on capital, and lastly profits. And the sum of these several amounts forms the base from which the selling price is made. Here we have two different methods of selling goods as practiced by the two leading industries of the country in which four-fifths or more of all the people are engaged. You can readily see how impossible it is for business to run smoothly under these conditions. I think it would call for no imagination on your part to understand that the selling methods of both parties should be tuned to the same key. Should not labor and capital engaged in the production of raw goods charge and receive the same pay as we pay to labor and capital engaged in manufacturing goods? We should realize that to take what others offer and to pay what others charge is childish in the extreme. The same rules should apply in computing values on raw products in the hands of farmers as applies to the manufactured article.

Let us change our line of thought and take a long look backward. Go with me, if you please, down through the misty ages of the past until you catch a glimpse of the primative man dressed in the skins of wild animals and housed in the shelter of some overhanging rock. For food he used such fruit, grain, and so forth, as he himself could gather; he knew no law but that of his own will; he was as independent as the beasts that roamed about him in the forests or the birds that flew over his head. This man was the first and last example of an independent man. As his mind began to develop he began to learn that by associating himself with other men he could accomplish much more than he could accomplish alone and thus be better able to supply his ever increasing wants. From this time forward associations among men have grown year by year, and century after century, developing into forms of civil government and stupenduous business enterprises until we have before us the civilization of today. The independent man has passed away and in his place we have the dependent man. The most casual observer of today can scarcely fail to notice that with each year men are becoming more and more dependent upon one another. This does not bespeak a lowering condition but a higher one. It is but the logical result of individual and national progress and must continue in a ever increasing ratio so long as civilization moves onward and upward in its course.

Without co-operation nothing could be greater than ''one-man-effort.'' Farmers are pointed to as being the most independent men in all the world; and it might be said with equal truth that our efforts are largely ''one-man-efforts''; that we are independent of each other and everyone is too true. Our independence has cost us many hard earned dollars; it does not stand for strength but for weakness; it does not bring success to our business but failure; it makes us easy prey for men in every other calling. History of man from the beginning until the present proves that nothing really great can be accomplished but through co-operative efforts. As an example of what co-operation can do I wish to show you the working results of some two hundred farmers who have found that their so-called independence was costing them too much and who have now adopted the dependent or co-operative plan in marketing their grain. I refer to the farmers' elevator company of Ruthven, Iowa, not because this company is anything more than any one of the many farmer companies now doing business, for, as you know, the movement is fast becoming popular all over the grain growing sections of the west, but because I am more familiar with this company. The Ruthven market is now receiving grain from over a large circle of the surrounding country, and from the present outlook we believe at least 600,000 bushels of oats will be received from last year's crop. Now let us do a little figuring; the farmers at Fostoria held a meeting on the 31st of last Octobe to talk over the matter of organizing an elevator company. Three people from Ruthven, including the writer, attended this meeting. We went by team to Spencer, stopping a short time on the way at Dickens. Oats were selling on that date in Ruthven for twenty-four and one-half cents per bushel; Dickens market was twenty-three and one-half cents; Spencer market was twenty-two and one-half cents. The price at Fostoria, as we learned at this meeting, was twenty-two cents for thirty-three pounds, which equals twenty-one and one-third cents for thirty-two pounds. This showed the Ruthven market to be three and one-sixth cents higher than Fostoria market on the same date, the freight to Chicago being the same at both stations, viz: seventeen cents per hundred pounds. Now multiply 600,000 by three and one-sixth cents and we have $19,000. The capital invested in the Ruthven company is $3,800. This saving represents 500 per cent on the capital invested, and every cent has gone into the pockets of the farming community and is now being paid out by them for groceries, clothing, etc., stimulating the business of the town and benefiting every business interest in that locality. But this is not all, the Ruthven market has influenced the market in all the near by towns and farmers for many miles in every direction are receiving more for their grain. These savings have not gone into the treasury of the Ruthven company, but, as previously stated, into the pockets of the farmer who raised the grain. Outsiders have fared even better than those who invested their money to start the business. They have stood back and let their more enterprising neighbors do double service, and when the price is won and they receive a pocketful of extra dollars they never go, manlike, to the manager and say, "I appreciate what your company has done for me" and give a dollar or two to help pay the running expenses. No; they are *independent men* and do not belong to the organization. Why, some men would not organize to fight back *Satan* himself. I want to tell you the path of the farmers' elevator company is not strewn with roses. Their greatest enemy is not the organized grain trust, but the *independent farmer*.

This shows what a little enterprise has saved the farmers in the vicinity of Ruthven on one crop. But I must leave you to compute, if you can, how much they have lost in all the years that have past. The time is already here when every enterprising, up-to-date dairy community owns and operates a co-operative creamery. The time has also come when every enterprising, up-to-date grain raising community does, or very soon will, own and operate a co-operative elevator. What would you think of a dairy community that would go on year after year paying the expense bills of four or five creameries all built close together, standing along in a row? How do you suppose such a course would affect their milk checks? Would it not be more wise if one creamery prove too small to increase its capacity? Now apply this reasoning to the grain producing farmer who has been paying the expense bills for operating whole rows of elevators in every little town all over this country. How do you suppose it has affected his grain checks? Can you wonder that farmers declare that grain raising does not pay? If you would like to test this matter for yourself, load up two wagons with grain, send one to the Ruthven market and one to the Fostoria market and note the results.

Some over-cautious, but well meaning farmers hesitate to join these societies, believing that being officered by inexperienced men, as they often are, that some will meet with failure. I wish to say that this fear is well grounded. Last week's paper reported a partial failure of one of these societies at Kenset, Iowa; our daily papers are careful to report all such failures and they should prove valuable lessons to us. However, no papers record or show how much the unorganized farmers all over this country are losing annually. Banks and all other business enterprises sometimes meet with failure; we read of these failures every day of the week and they excite no comment. If one of these societies fail the outside loses nothing except a good market; but how about the stockholder? Let us see. Suppose the Ruthven company should fail at the end of this year's business. The articles of incorporation provide that the private property of the stockholders shall not be liable for corporate debts; so that all a stockholder can lose will be the amount of stock he owns, which may be any sum from ten dollars to one hundred dollars, the latter being the limit of stock that can be owned by one individual. Now some of the stockholders sell as much as four thousand bushels of oats in one year; others perhaps not over five hundred bushels. If we multiply four thousand by three and one-sixth cent we have $126.00; multiply 500 by three and one-sixth cents and you will have $15.80. By this we find that if the man who sells 4,000 bushels invests to the limit $100, and the man who invests $10 sells 500 bushels, both will get their money back the first year, besides a big interest.

Now let us look at this question from a different standpoint. Society divides itself largely into two classes: first, those who engage in the production of raw material; second, those who engage in the manufacture of raw material into a finished article. The manufacturers regard the selling of their product as a matter of first importance. They are fast discarding the idea of every man for himself and combining their forces. They often meet in gatherings similar to the one here today, but instead of discussing the subject of how to load down the market with more of their goods, they discuss the best methods of selling goods. They form societies or companies and equip them with the ablest business talent they can command. They formulate and agree to rules that bind the members in the matter of sales. They figure the cost and put cost marks upon their goods, to which profits are added, and this makes the selling price.

The most important producers of raw material in the world are farmers. They also meet from time to time in institutes, as we have met today, and they always take up the one question of production and talk it over and over, year after year, seeming to think that their business is all one-sided—like a jug handle. They realize that the business of the country is somewhat out of balance, but they fail to understand that it is theirs that is wrong. We should realize that as a producer the farmer is a giant among men; and that an uneven growth is unhealthy to trade.

Nearly every relation that man has with his fellow man can be classed under one of two heads: First, their social relation, and second, their business relation. Socially a man may meet one hundred of his fellow men in a year, perhaps five hundred, perhaps one thousand, possibly ten thousand. Now, how many does he meet in a business way? Let us see. You do not have to meet a man face to face to do business. For example, take the farmer who carries to market a basket of eggs; the customers for his eggs are the people who buy eggs for consumption; the merchant who counts and pays for them simply undertakes to help the farmer by delivering them to these customers. Now, when he buys a spool of thread, or a few yards of cotton cloth, he is patronizing the cotton growers of the South, and all who weave and spin goods. When he buys a pound of tea he is patronizing the tea growers of China and Japan. By the time he has traded out the price of his eggs he has come in business touch with nearly every man in the civilized world. This applies not only to eggs but to all products of the farm. Man's social relation as compared to his business relation is like comparing a grain of sand to the Rocky Mountains. Nearly every question that agitates the world today is a business question; settle these and little else will be left to settle. The people are not particularly concerned about production; this important question is giving us no serious trouble. The increasing crops of raw material that we gather each year is enough for all our needs, while the output of our factories grow better in quality and larger in quantity. The difficulty is over the division of these goods. Some people who work hard, and produce much, get barely enough to live, while others who produce little or nothing, grow rich. What would be the result if farmers would conduct their business as merchants do theirs? If farmers would adopt the same rule in selling raw goods that business men use in selling manufactured goods would not both receive the same pay for labor and capital employed? Most certainly, for like methods produce like results. This would satisfy every reasonable man, and one of the biggest problems that confronts the people today would be in a fair way of being solved. But you answer, the present method of selling grain has been in practice for thousands of years and never will be changed, or if to be, it will be by a long and gradual growth. Remember, we live in a rapidly progressive age where changes are taking place so fast they excite little comment.

To illustrate, we will use the farmers who sit in this room. Go with me down onto the streets of Emmetsburg and then look back over the past twenty years. See yourselves as you drive to town with butter in tubs, butter in jars and prints in pails. Some of you go to one store and some to another, for every merchant was a butter buyer twenty years ago. Now, when it is sold just invite yourselves up into this hall, and after you are seated suppose one of you who are present today says, ''Farmers, I have been watching you as you sold your butter today, and I predict that in twenty years from now this will all be changed, in twenty years you will not sell butter as you do today; you will not even make the butter you spread on your bread, but it will be done by a board of directors better than you can do it for yourselves. Butter for the home will come from the factory and you will be paid at the bank for your milk. What do you think of this prediction?'' Don't you know that more than half of you men would be on your feet in less than a minute and denounce the speaker as a fool. You would say that butter has been made in the home and sold in the stores for thousands of years, and you can not make us believe that this will be changed in twenty years. Now, every one of you men know that this change actually took place in the space of about five years, and that during the past fifteen years your boys and girls have grown to be men and women without seeing one single tub of butter packed in your home. Now I will tell you what we can do in the next five years. To illustrate, the farmers' elevator at Ruthven will save the farmers in its vicinity enough on last year's crop to build a first-class elevator in each one of the five nearest towns: Graettinger, Terril, Dickens, Ayrshire and Emmetsburg, and give to each as much working capital as the Ruthven company has ever had. Every town in the grain belt can build and save to farmers from three to ten thousand dollars the first year, besides the cost of building. This saving would finance a national company with a capital of from two to four hundred million dollars, which, with the head office in Chicago, could establish branches in all the principal grain markets, and this at no extra cost to the farmer, for he would receive as much as he now gets. Instead of four hundred million dollars, fifty million would probably be sufficient. The head office could send out stop orders to the locals in Kansas and the Dakotas, for instance, to ship out no wheat, say for two days, or two weeks, as the occasion required, and in this way hold the grain off the market until it is called for at fair prices, the same as merchandise is now held in warehouses and stores at full values.

## FARMERS' CO-OPERATIVE ELEVATORS.

*Farmers' Tribune.*

During the past year the co-operative farmers' elevator companies have been gaining ground. The growth has been slow but sure until the movement in the central west and the corn belt section is resulting in much good to those sections where the place and conditions are right for the establishment of such institutions.

As might be expected, occasionally a company fails, but where this occurs it may be attributed in most cases to a distrust on the part of the farmers in the undertaking, together with poor business management on the part of the directors and business manager. Experience has taught that the manager must be a good business man with tact and judgment, and back of him must be the farmers themselves with the right kind of a co-operative spirit; they must thoroughly understand that the co-operative elevator stands for a part of their own business. When they view the situation in such a light, they will stand by the managers and board of directors.

The idea of co-operation among farmers was first brought to the attention of the public many years ago by the Grange movement. It was the Grange Association that raised the question of Congress having the power over interstate transportation companies. They contended that Congress had full authority to fix freight rates, and to the Grangers may be given credit for the present interstate commerce law, which has saved the American farmers hundreds of millions of dollars.

From the outgrowth of co-operation among farmers has come mutual fire insurance companies, co-operative creameries and cheese factories, co-operative telephone companies, etc. The present rapid development of co-operation among farmers goes to show most conclusively that they are realizing more and more the value of co-operation among themselves. Slowly but surely the commercial world is feeling the force of this co-operation on the part of the farmers in their attempt to better their conditions in trade and commerce. The establishment of a large number of farmers' co-operative elevator companies is the outcome of the farmer taking hold of things and meeting conditions forced upon him by trusts and corporations.

Wherever farmers' elevators are well managed they have proved of incalculable benefit in securing profits that otherwise would go into the pockets of the middlemen. A large number of these elevator companies have been established in the west during the last few years. Illinois at present, has over one hundred and seventy farmers' elevators, while Nebraska has even more than that. Iowa has a good list of successful farm elevators that are gradually being added to each year. The movement has made strong headway in parts of South Dakota, Kansas and Oklahoma; in fact a healthy growth is seen in all sections where farmers' elevators are established on a business basis and conducted along such lines. A few months ago, rebates were paid to line companies which worked hardships with the farmers' companies, but this rebate has been done away with. An attempt on the part of grain dealers to boycott firms handling grain shipped to them from farmers' elevators has been intimated. If this is being done, it is sure to lose its force, and will, we believe, redound to the benefit of the farmers' elevators.

The idea of farmers co-operating is one that should appeal to all sections of the country. That the plan is feasible should not be questioned. In other lines of farm work, such as fruit growing, success has attended the various shipping associations organized among fruit growers in many parts of the United States.

In Europe, for a number of years, co-operative societies for handling all kinds of farm products have been in existence. A few years ago, when we visited Europe, we were pleased to note a large number of co-operative associations in Holland, France and even in England that had a large membership and were doing a most successful business.

There is no question but that co-operation is a growing power among American farmers, and we doubt not but that in a few years there will be scarcely a section of the farming country that will not be favored with co-operative societies or companies that will be handling the products of the farm. The hope of the American farmer, under present conditions of trade lies in the united action and honest co-operation.

## FEEDING INTELLIGENTLY.

*Miss Witter, Professor of Domestic Science, Iowa State College, Before the Story County Farmers' Institute.*

Those of us who know anything about the feeding of cattle through Iowa and all through this western country, know that when a man plans to feed his cattle he estimates what money he can make out of them; and the first thing he does is to see that he keeps his cattle healthy and well.

He knows that steers will not grow and bring money for him unless he gives them good food; and the more food he can get into them and have that food made into energy and strength, the more money he can make.

The first thing he does after he plans to get his stock sold, is to find out the best ration he can get for that pen of hogs, calves or whatever it may be.

Now he puts that pen of live stock to eating this balanced ration and then watches them carefully.

He may have one hundred steers in one lot. Pretty soon he finds one that is not thriving; he takes it out and gives it a different ration. He changes its food, he plans; he works, presently he finds another that does not thrive, and out of his hundred he may get ten that do not thrive on the regular ration.

Now it seems to me we ought to know as much about our children and family, and we ought to be as anxious to learn about them as the man is about his cattle and pigs; and it also seems that if we plan our balanced ration which has been found by scientists and investigators to be a general, good food, we ought to be willing at least to try it and watch our family and see whether that balanced ration is going to be better for them than the food we had used.

If that balanced ration is not good we ought to have brains enough to work out a good ration for ourselves.

It is not true that we are machines, it is not true that we can be made to work exactly like well oiled cogs and well run engines; because there are individual differences in us and we have to watch ourselves for that very reason.

If we had been made like the sheep, with our clothes on our back and our food right before us, we need have no trouble along this line. But we were not. We were given brains and we were supposed to use them. I do not know in what way brains tell better in the long run than in planning the food for those we love. I do not know where food tells better than in the brain of children. I know a mother who said, "My two younger children will never do the work that their older brothers and sisters do, because, when they were little we lived way out west for years; we almost starved, and those children did not have the good wholesome food that their brothers and sisters had while they were growing." This matter of feeding means a great deal to us all. It means just as much to you and to me as it does to somebody else in our power.

Sometimes I think the responsibility is more for each one of us to feed ourselves than to look after other people, because other people ought to use their brains to know what to eat.

You have not the right—I have not the right, to ruin the machinery of our bodies attempting to make brain and body power by putting in it the wrong kind of fuel. Any man who runs an engine and puts in fuel that does not give a good steady fire, will get poor results. If he puts in cobs and shavings he can not do good work. If on the other hand, he puts in big chunks of coal, what then can he do with his machinery. We have no right to feed our engines, the bodies, by putting poor material in our stomaches and then expecting to get good work out of them. This matter seems worth all the thought we put into it. Some people eat only two meals a day, some only one. I have known people who practically lived their lives by eating only one good meal a day. The Germans eat five times a day and we find, sometimes, they do better work than some of us who eat three, two or one meal a day.

When you come down to the foundation of the whole thing it simply means that good brains can only be produced by the use of good food.

If you use your brains to the very best purpose and find out about the facts the scientific men have laid out before us, you will have no trouble in planning your food.

I believe Americans, as a rule, eat too much. I believe that more people hurt their stomachs by overeating than undereating.

In this great land of plenty there is not much starving from lack of food, but there is a good deal of starving from overeating.

Some of these days when we know more about it we can plan definitely, but nowadays it takes pretty careful planning to keep yourself, the children, or whoever is within your reach in absolutely perfect health. We have water, and proteid, which is the muscle-forming food, and starch and sugar along with the fats. These with the minerals give all that is necessary in the make up of the body.

We have minerals for the bones and other hard tissues. One of the great lacks in our food is water. I suppose that not half of you people sitting here drink enough water. The physican who takes care of you when you are ill, knows that you do not drink enough water as a rule. The man who feeds cattle knows that unless he gives them plenty of water they will not be able to take care of their food.

It all comes back to the matter of using brains about food. For a good many years we did not think it necessary to use any brains in this direction, but after all we are coming to feel that as a people we must have better food and that means food planned with more brains.

### HOMEMAKING REQUIRES DEFINITE KNOWLEDGE

There is a very general feeling throughout our country, among educated people, that homemaking means definite work with definite knowledge.

In years gone by a girl was supposed to come to that definite knowledge instinctively. At least she was given no special preparation for the definite work which must be guided by knowledge. Today we are questioning in what way that knowledge may be given to the great mass of girls who will, in a few years, be the homemakers of the land. There has been, in the past, feeling that the mother in the home ought to teach the girls in such a way that homemaking be practically a part of their heritage. Conditions have changed since the time of our grandmothers, when homemaking was practically all that was demanded of women.

Today we ask not only that she shall be a good wife and mother, a good homemaker, but that she be a good church woman, a good society woman, a good club woman, a good citizen in the town in which she lives. And these many duties have filled the lives of our women until they have little time left for definite instruction to the daughters in the homes. The daughters, too, have their lives filled with school duties, music and many demands which are made upon them by the neighbor girls. This makes it almost impossible for the mother to find time when she can have the daughter at home to give her instruction in homemaking.

A second way of teaching our girls homemaking comes through the public schools. We learned years ago that it was much more economical for a community to hire a teacher to teach all the children than it was to expect each mother to teach her own. The same economy is found in teaching homemaking. One teacher can teach thirty girls the principles of homemaking more easily than thirty mothers. If the work of domestic science is put into the public schools, every girl will have some teaching in this line. And who will question the usefullness of this?

Which will she use most in her life—knowledge of quadratics or knowledge of yeast? Which will be of more value to her—knowledge of ancient history or the knowing how to prepare a good wholesome meal?

Will she not give thanks, in the the coming years, for knowledge of the fabrics of which her clothing is made or her house decorated, much more than for the knowledge of German or her ability to translate a few Greek sentences? In no sense would I give the impression that I undervalue the studies in the schools. The more our girls have the better, but—certainly a knowledge of homemaking will give her more power for the duties that will come into her life than will the knowledge of any other one branch.

It is her right to have this knowledge and we owe to the girls in every community the training that will make them most useful and most helpful in the coming years. All this supposes that we are a unit in believing that a girl should know something of homemaking before she comes into her own home.

We have a right to believe this if we look at every other kind of business carried on in this country.

No man trusts a banker who has not had a banking training. Not one of us would ask to have a prescription put up at a drug store unless someone in the store has had a druggist's training.

We do not trust our lives in the hands of a physician who has had no medical training. We do not even want to hear a man preach unless he has had theological training. Our clothing must be made by a practiced dressmaker. We send our children to schools presided over by trained teachers. Is it right, or just, or wise, or profitable to ask a girl to make a home, and to care for the physical, mental and spiritual growth of a family without giving her some help toward making that work easy for her and giving her power to make her work accomplish the best results possible?

I leave you to answer this question.

## HINTS ON SEPARATING CREAM.

*Wallaces' Farmer.*

In a recent issue of *Dairy Produce* we find the following hints on the care of the farm separator and the cream:

*The Separator.*—1. See that it stands perfectly level and firm.

2. When not in use keep it well covered so as to prevent dust and sand getting into the bearings.

3. Clean all the wearing parts thoroughly not less than twice a month.

4. In separating maintain an even, regular speed. Turn the crank at indicated number of revolutions.

5. Have the cream screw set so as to throw a stream of cream that will test from thirty-six to fifty per cent butter fat.

6. When all the milk has been separated, flush the bowl out by pouring into same sufficient amount of warm water or skim milk.

7. After separating take milk and cream pans off; take bowl apart, and wash all parts, reservoir, and pans; wash in lukewarm water, using a little washing powder in water, then wash in scalding hot water, and put in the air and sun to dry.

8. Wash thoroughly after each time it is used.

9. Never put the bowl together until wanted for separating.

*The Milk.*—1. Always strain the milk before pouring into the reservoir.

2. Separate it as soon as possible after drawing it from the cow.

3. Feed the skim milk back into the calves and pigs as soon as done separating.

4. Never allow one milking to stand over until you have another milking so as to save the trouble of one running of the separator. This is a careless and wasteful practice, and will usually make No. 2 cream.

*The Cream.*—1. Always have a clean, sweet receptacle to catch and hold the cream. A common five-gallon shotgun can is very good for the purpose.

2. Cool the cream as ràpidly as possible, either by stirring with the can in cool air or in cool fresh water, and keep cool until delivered.

3. Never put two batches of cream together until each has been thoroughly cooled.

4. When each lot of cream is put with the older cream it should be stirred through until all is alike. This helps to prevent souring, and aids in getting a correct sample for testing.

5. Never put tight lids on cream cans while cream is warm.

6. Never let your delivery cans be the receptacle of the cream from the separator.

7. By producing a cream testing from thirty-six to fifty per cent butter fat less trouble will be experienced in keeping it sweet, as the milk in the cream is what sours.

8. Delivery of cream should be made at least three times a week in summer, and twice a week in winter.

If these rules are carefully observed your cream will always grade No. 1.

## GIVE THE BOYS AND GIRLS A CHANCE TO ATTEND THE FAIR.

*Wallaces' Farmer.*

The State fair season is upon us. Notwithstanding the attractions of the Louisiana Purchase Exposition at St. Louis, the State fairs are likely to be well attended this year, and the exhibits will no doubt be as large, as varied, and as interesting as ever. There is no reason why there should not be a full attendance at the fairs all over these Western States.

We desire to make a plea to each individual farmer who has boys and girls of suitable age to encourage them to attend the State fair. The farmer and his wife have often been at fairs before. There is nothing particularly new, striking or novel to them. They are accustomed to being away from home. It is quite different with the average farm boy or girl. Without going back to their childhood recollections they can scarcely realize the keen desire of the farm boy and girl to escape from the seclusion of the farm and see something of the great world of men and things beyond its precincts.

There is no better place for them to see the world than the well conducted state or county fair. We say "well conducted," for there are county and district fairs which boys and girls should not attend; fairs where they will get inoculated with the "get-rich-quick" idea in the form of gambling; fairs where lewdness is allowed to disport itself, and not always in disgusting form. The young boy or girl should not be allowed or encouraged to attend such fairs as these.

The moral character of the State fairs has been gradually improving from year to year. Their educational value has been very greatly increased. We assume that the boys have worked well during the plowing and corn planting and corn cultivating, and have done bravely through the heat and sweat of the harvest; and now that the corn is laid by, the harvest is gathered, and there is a time of leisure on the farm, let them have a chance to get away from home and see what is going on outside the precincts of the farm. Encourage them, however, to see things with their eyes open. Let them visit the stock judging and see on what grounds the judge distributes the ribbons. Let them get the ideal animal firmly in their minds and thus learn the defects of the live stock at home. Let them visit the dairy department and note the best methods of handling milk and cream, the most modern improvements. Let them visit the agricultural department and note all that is best in the exhibition of the products of the farm. Let them visit especially the horticultural department and note its possibilities.

Don't be afraid the boy will become contaminated by this contact with boys and girls from over the State. If he has good blood in his veins and is well trained at home there is comparatively little danger. He will learn how to associate with kindred spirits, and will come home tired in body but refreshed in mind, and will carry with him an idea of what is going on in this great world outside. He will be able to tell you more things than you would probably see if you were there yourself. You have seen them before they fail to make an impression upon you, but they are all fresh and new to him. He is perhaps a closer observer than you are, and you will probably learn more of what is actually going on at the fair by sending your bright boy and girl to be eyes for you than you would if you had gone yourself. Give the boys and girls who have done well this summer a chance to see what is going on outside.

## VALUE OF THE INSTITUTE TO THE FARMER.

*Geo. C. White, Before the Story County Farmers' Institute.*

The principal aim in the life of every worthy citizen is to continually better himself and those with whom he associates. Each class of citizens must find the method by which they can best reach these conditions. For the farmer there is certainly no better way to help himself and his neighbor than by attending and helping along the institute.

It is not possible for any sensible man to hear such men speak as Holden, Turner, Larsen, Swallwell and many others who have helped fill institute programmes without learning things of real value that will make us better citizens and of more value to ourselves and our country.

A farmer must have knowledge and skill in many lines of work. Life is too short, and the competition of the world too strong, for each man to study out the many different lines for himself. So once a year we hold the institute and have the persons who have spent years in the study of corn, or butter manufacture, etc., tell us the results of their study that we must need to know.

Iowa's corn crop for 1904 is estimated at three hundred million bushels and valued at one hundred million dollars.

If the knowledge scattered and the enthusiasm awakened has increased the crop one per cent the farmers of this State are one million dollars ahead on this one crop. However, I believe that the increased attention given to better seed and a better stand in the last two years made an increase of nearer five per cent than one per cent on the crop of 1904.

The time has come when we must increase the production of our farms. The average Story county farm can be made to produce fifty per cent more with very little additional cost of production. I hardly feel like making this statement without telling something about how it may be done. So will say first we must use more clover and feed on the farm both the grain and hay raised. Take care of the manure and spread it over the fields. Change the cloverfields every two years to corn. At least one-third of the farm should be kept in clover and in five years the production of the avertage Story county farm may be increased fifty per cent.

A crop of eighty bushels of corn per acre is not grown by accident. Good land in good tilth, good seed, an even stand and correct cultivation are necessary. Everything must be just right. It is a matter of science.

And yet the man who will do this work just right each year will grow twice the average yield per acre for his county and with but little additional expense.

The average crop is worth but little more than the cost of production. But the man who does his work so skillfully that he raises a crop twenty bushels per acre greater than the average has a handsome profit.

These are the things we must get from and give to each other and the institute is the place for exchange.

Many of us know better than we do. We need more enthusiasm to urge us on to greater effort, to bring forth the best that is in us. We must be awake and doing, making a stronger effort each day and each year if we are worthy and useful citizens of the community and State. The man who sits still and complains, the grumbler, is of no use in the world. He is simply a parasite sucking the blood from the world of action and giving nothing in return. It is necessary for us to get together, to learn that our interests are mutual, that there are many things that make us better men and aid us in our work, that need our united support. The College of Agriculture at Ames is surely doing a great work to aid the farmers of Iowa. Every farmer should receive and study their bulletins which explain and give results of the work they are doing. These bulletins will be sent free to any one who writes to Professor Curtiss and asks for them.

The short course in corn and stock judging, and domestic science at Ames, the first two weeks in January, each year, is probably the best farmers' institute in the world and any person who can attend will find it intensely interesting and of great value.

It is our duty to attend and encourage both the State and county fairs when they are intelligently and honestly conducted.

Because the farmers have not been united and aggressive their interests have too often suffered. We have too often allowed the policies of our parties to be controlled by the political bosses and then walked up to the polls and voted the ticket straight, although our interests had been sacrificed.

It is not right that we should pay from fifty to one hundred per cent more to ship a car of live stock from here to Chicago than the packers pay to ship a car of dressed meat from the Missouri river to Chicago.

It is not right that we should sell our products in competition with Russia's and India's pauper labor, and yet be compelled to buy in a high protection market. These are things we have not given the careful attention they deserve.

The tariff and Interstate Commerce Laws are economic questions of vital interest to the farmer and we should study them as they relate to our interests and not as partisan measures.

Our Governor and the President are urging Congress to pass a bill which will give the Interstate Commerce Commission power to make a rate that shall be effective until set aside by the courts. Lets do what we can and urge our congressmen and senators to support this bill. Our prosperity depends on our market and the cost of delivering our products to that market. The railroads have taken the lions share of our profits. It seems the awaking is here and something must be done. Lets join hands and pull together and we can in this way better our own condition and that of our fellow man.

## HIRING FARM HELP.

*Breeders' Gazette.*

A formidable difficulty confronts the farmer who seeks to employ competent farm help. If he be fortunate enough to secure competency he stil is without assurance that he has chosen wisely. Industry, sobriety and reliability in the prosecution of the work of a well ordered farm are certainly entitled to eminent consideration in the selection of men to carry on farming operations according to the reasonable requirements of landowners, but many an employer of farm hands possessing all these qualifications has been disappointed to find after a brief trial that these rare elements of character do not constitute a satisfactory farm laborer. Disposition, in many instances, is more important than any of the characteristics named. A quick, hot, undisciplined temper nullifies the entire list of desirable traits in a farm hand and renders unfounded any hope he may have of securing a permanent position. A disagreeable disposition, which is an instinct to search for trouble and to magnify unpleasant trivialities, also incapacitates a man otherwise entirely acceptable for work on the farm of a considerate employer who is intent upon developing a profitable enterprise.

Some men are temperamentally adapted to certain occupations; others, unfortunately, are not suited on account of their unusual temperaments to any kind of work performed for employers. To every farm hand certain chores are extremely distasteful and the demands of exigencies, such as frequently occur on the farm, quite galling. But the farm wage-earner blessed with an equable disposition does not rebel when called on to do disagreeable tasks. He reasons that he has contracted to serve his employer in whatever capacity the latter may place him. Whether he milks cows, makes garden, sets hens, cleans the stable, cuts weeds, oils a windmill, repairs a tile drain or what not is immaterial to him. Undoubtedly he will have preferences as to his work, but these are not to be arrogantly made known to the man who has hired him not for special jobs, enumerated and limited, but for general farm work. These terms comprehend the regular farming operations which begin early in the morning, continue until such time in the evening as the case may require, and sometimes culminate in a number of minor chores after nightfall. Farm hands are not employed according to the schedules which trades unions have adopted; the number of hours they are to work each day is not stipulated, as no farmer can afford to recognize arbitrary limitations of a day, particularly at certain seasons of the year. No reasonable employer will overwork his help simply because the latter good-naturedly submits to the infrequent prolongation of his day's work as it may often be necessary for him to perform light jobs about the house or barn after he has eaten supper and prepared for a coveted repose. He may be asked occasionally to hitch up or unhitch a horse, drive a breachy cow out of the cornfield or ascertain the cause of suspicious cackling in the henhouse. Under these circumstances he should be prompt and willing to offer his assistance, as he can not be exempt from emergency calls. The man who recognizes this fact and governs his demeanor accordingly, can hold his place until he resigns of his own volition, assuming that he is proficient, energetic and trustworthy. He can command a maximum wage and hold his job so long as there is anything for him to do. This is the farm hand who prospers because he strives to make his employer prosper. He succeeds because he deserves success. Faithful in small things, even-tempered and loyal to the interests he is paid to promote, and master of himself, he can surely graduate from the hired help class and himself become an employer.

But there is another type of workman drawing farm wages. His characteristics include an insolent aversion to some of the tasks he is asked to do in daytime and everything of an emergency character required of him after a given time in the evening. There are some farmers whose weakness of character renders them tolerant of this unreasonable attitude, and they encourage the eccentricities of their help by submission to many of their caprices. Let an unprincipled man attain a niche in the affairs of his employer where he imagines himself indispensable and he becomes dictatorial and marvelously fastidious. It should be understood that no employe is ever indispensable to his employer, and the latter should demonstrate this fact whenever the provocation is sufficient.

Piles of recommendations written by friends of the bearer are not to be taken as absolute proof of the fitness of a candidate for a position. Endorsements usually relate to industry, honesty, sobriety and efficiency; they rarely disclose information as to the disposition or temper of the applicant for a position. As this information is of great importance to employers of farm help, the farmer who is considering applications should not form his decision until he has ascertained what he should know about their peculiar traits of character. In selecting a man for a permanent position on a stock farm the employer will do well to reject the man who has periodical fits of wrath because he imagines his work is criticised; who assumes that farm animals can be mastered most effectually by resort to the use of a hoe-handle, pitchfork or stone—in short, the man who is a slave to his temper. If such a man has already been employed the sooner he is released the better. Keep him on the farm and maimed stock, broken tools and abused buildings will be more conspicuous than the amount or character of his useful achievements. Farms are not reformatories for ill-tempered employes. Try to secure a man with a happy disposition, even if he be deficient in some other respects. The man whistles or sings while at work, has proper regard for live stock and loves children is your ideal farm hand. You can scarcely treat him too generously.

# THE IDEAL HIRED MAN.

*H. P. Nicholson, Ossian, Iowa, Before the Winneshiek County Farmers' Institute.*

That there is such a person as the ideal hired man |will not admit of a doubt, although there may be some who will question the fact. Now there being such a person, the question is raised, must he be found or can he be made, and, if so, how? He is a person who has already been found and as a rule is found stopping for a considerable length of time in one and the same place. As a rule he is not a very migrating sort of person, but, on the contrary is one who is seldom out of a job, and one whose help is much sought after. In the first place, the hired man has much to do in making himself, so if the hired hand is not an ideal one, he has himself mostly to blame. Many opportunities present themselves, which if he is watchful, careful and on the alert to improve, will contribute much to his benefit.

The ideal hired man will be considerate of the rights of his employer. He will be honest and never idle away the time that belongs to his employer, for it is just as wrong to steal his time as it would be to steal his cash, and he will be just as careful of the property of his employer as though it belonged to himself. The ideal hired man must possess all the virtues and some of the vices of the average human being. He must be watchful and careful of his speech and manner, for our best and dearest are often entrusted to his care. Oftentimes he must be the ''Master'' and assume all the responsibility for the time being, and he must awake to all the farm's best interest, not to the farm's detriment. There should be inculcated a love for his work, not simply a love for the results obtained from the labor done, but a love for the growing things, for the wide out-of-doors, for the animals that claim our attention, and with it, care for the best results possible, for in them are our dollars and cents.

The hired man must be a born farmer to reach ideal conditions. We often say of them who succeed in certain lines, that they are a born machinist or a specialist to whatever their calling may be, so why not say born farmers. Unpleasant surroundings have driven many an ideal farm hand to less lucrative occupation and one for which he has no liking, consequently he never attains success.

But at the same time the duty of the employer must not be lost sight of. The employer must be just with his help, he should treat them as he would like to be treated were he in their places. While particular and observant he should avoid being too exacting. If ever out of patience concerning their way of doing anything, or on account of some mistake made, it is best to think twice before speaking once. Always be prompt in payment of dues for labor preformed. Strive as hard to please the hired man as you would have him strive to please you. Better consult one another in regard to work rather than be overbearing in your commands. In planning your work treat the hired man as though you had confidence in his judgment By pursuing this course it will do much toward making the ideal hired man. It is a good place to exemplify the principle of reciprocity. The employment of farming is the most honorable in the world, and one in which pride and pleasure should be taken for more than it is today. But the world moves, and the day will come when to be a farmer will be to have reached the heights of earthly possibilities. Then learn, ideal hired man, to labor and to wait.

## THE IDEAL FARM HOME.

*Mrs. Robert Engelhardt, Before the Sac County Farmers' Institute.*

It is said that few people apply to their own lives all the theories and principles they commend. In other words, most people fail to "practice all they preach." I desire to assure you in the beginning that I am no exception to the general rule and yet the ideal conditions which I shall present and which I believe are at the same time entirely practical are the heights which we in our scheme of home surroundings hope to attain.

It is not my purpose to treat this subject from an ethical standpoint only indirectly, as beautiful, comfortable and healthful surroundings may affect the morals of the home.

In planning and arranging our homes the health and comfort of our family are of prime importance, and this does not necessarily preclude the development of all that is beautiful and artistic in our natures. By beautifully and artistically furnished homes I do not mean an aggregation of useless and meaningless bric-a-brac, handsome, airy conceits, nor hearse-like chairs, neither frail gilded ones (the former no one wants to use, the latter no one would dare). Nor do I mean an elaborate display of articles which advertise our wealth or tastes and turn our homes into mere showrooms that our neighbors may come and gaze in admiration or envy. Thanks to twentieth century progress, beauty and utility have made a most pleasing combination and our homes may be comfortable and serviceable without outraging our aesthetic sense or defying the laws of sanitation. Our homes are pre-eminently for ourselves, so, instead of making of them a museum for the accumulation of dust and disease-laden germs, let us have them comfortable, airy and healthful, with space to live in, where husband and children delight to be, and then you have perhaps helped, in part, to solve the qnestion, "How to keep the boys and girls on the farm."

Let us have our homes furnished as beautiful as you please, remembering always that beautiful and artistic results are not obtained by an obtrusive and bountiful display of wealth but by simple and harmonious effects. Simplicity in furnishings pays tribute to the truly artistic and would certainly be appreciated by the family who find themselves penned in an overcrowded room, where the act of turning around is liable to result in the overturning of some artistic creation. Happily the day is on the wane when the best room in the house is darkened with heavy blinds and closed shutters, only to be opened on state occasions, when it presents a funeral appearance and emits a cemeterial odor as unpleasant as it is unhealthful. The unservicable tidy which tried men's tempers fortunately has been relegated to the attic (or better still, ash heap), and when the too-dainty-to-be-used sofa cushion follows in its wake then the "gude man" of the household may come in and occupy chair or couch without trepidation and at last find comfort and pleasure in the home. Let us make our homes beautiful as we will, but always livable and comfortable and not too beautiful to be used.

It is not feasible to make inflexible laws regarding house furnishings, but in this, as in our manner of living, stress should be placed on simplicity for the sake of comfort and cleanliness. The time, strength and help the housewife has at command should largely determine the amount and style of furnishings. This does not mean that a pretty statue or excellent bust is not to be seen in our homes, but an accumulation of furnishings which overtaxes the strength of the household help to keep freed from dust or acts as a harbor for germ-laden dust is a menance to the health and comfort of the family.

The question of sanitation is one which seriously affects the interests of the entire family and for this reason every housekeeper should avail herself of every opportunity to increase her knowledge of conditions which tend to make her home more healthful. A knowledge of sanitary laws should be an essential part of every woman's education. Books on "Sanitation in the Home" may be secured so cheaply and in so concise and practical a form that a knowledge of the rudiments of a healthful home is within the reach of every housekeeper. A few moments each week devoted to its careful perusal will store one's mind with a vast amount of useful knowledge.

As "eternal vigilance is the price of liberty," so eternal vigilance is the price the housewife must pay for a healthful and sanitary home. Cleanliness and pure air to a large degree will insure a state of security to the inmates of the home. The first essential toward a healthful home is the maintenance of pure air. During the summer, when doors and windows are open throughout the house, the problem is reduced to the minimum, but when at the first approach of winter, we cork our windows and close every crack and crevice about the house, the question of ventilation assumes proportions.

At this season of the year the cellar becomes of prime importance, for upon its condition will depend largely the health of the family. The ideal cellar or basement is one which is not made a receptacle for vegetables, some of which are in various stages of decay. But, as few of us are so fortunate as to have a separate root cellar, which, by the way, is better for the vegetables as well as the family, the question of giving the cellar the needed amount of ventilation and sunshine, and, at the same time protecting the vegetables from Jack Frost, becomes a serious problem and usually proves so baffling that we are apt to see that nothing in the cellar is frost nipped and run the risk of the impure air which fills our rooms, yet wonder why we suffer with headache, languor and biliousness, if we escape the more serious results.

Then we keep our living rooms heated at various stages from 60° to 90°, too rarely opening doors and windows, the only means of ventilation the average house contains, and continue to wonder at our languor and headaches; then we go to our sleeping rooms which too often have not had a change of air during the twenty-four hours, we tightly close all windows, most of them having solid double sashes, and wonder why we arise in the morning feeling so depressed. Fortunately, the husband during the day at his outdoor work, has his lungs purified and the children in their walk back and forth to school have a breath of fresh air, but the housewife breathes the poisonous air day after day and comes out in the spring all run down and can not see why she should.

The ideal floor from a sanitary standpoint is the hard polished or painted floor, covered with rugs which can be frequently removed and aired and dusted. To those who have tried this method of floor treatments, housecleaning ceases to be a bugbear.

The subject of drainage and plumbing and the disposition of sewage is too complicated and technical for discussion in this paper, yet not beyond the comprehension of any one who will give the question a little time and study, but their importance can not be too strongly urged. It is a question that receives far too little attention in the average home. There is probably nothing we use in which lurks greater danger than our drinking water, and the source from which most country people draw their drinking water. The shallow dug well is prolific with germ life. True these are not always deadly, yet there is always the greatest danger that they will cause serious epidemics. Now, while I picture to you a grave condition, I can offer no practical antidote. Distilled and boiled water are solutions of the problem that require work and care. The deep well encased by iron pipe is probably the easiest to the farmer, though, in case the farm water is already provided for, it is an added expense. The theory that drinking water should come from wells so far removed from barnyards, pigsties and sewage drains that polution is impossible is not very practical on the farm.

While many of us are hampered by reasons of environments, finances, time and other causes which prevent us surrounding ourselves with sanitary conditions which are ideal, yet there are few of us perhaps but could in some measure improve our present circumstances.

Now that we have looked at the prosaic though preëminently essential side of the ''Home and its Surroundings,'' let us turn to the beautiful in nature and see what can be done toward adorning the exterior of the home. Some one has said: ''Happy is he who has a home, though it be only four square walls; doubly happy is he if he be the possessor as well of a strip of mother earth that he may have a domain all his own; thrice happy is he if his home grounds are bright with leaf and bud and bloom rejoicing the eye of the passer by and bringing happiness and contentment to the inmates of the home.''

I believe one of the surest ways to keep the youth of our country at home is to broaden their interest in country life and make it so attractive that city life is robbed of its glamor in comparison. Nature appeals to all that is noblest and best in man and the cry of the twentieth century, ''Back to Nature!'' is a significant sign of the dawn of the ''simple life'' of which we hear and read so much. There may be met once in a while one who affects to despise this sentimental nonsense, but there are few who, when surrounded by pretty lawns, clinging vines, beautiful flowers and stately shade and graceful ornamental trees, do not respond to their silent influences, and higher thinking and better living are inevitable results.

The idea that a home can not be made beautiful unless large and expensive, with money at hand to elaborately terrace grounds, and provide fountains, gravel walks and drives and costly summer houses, is certainly a mistaken one. No class of people has such ample opportunities for the adornment of the home grounds as the farmer and yet, in comparison with the advantages he possesses I think I am safe in saying that no people fail to avail themselves of their opportunities as does the farmer along that line. Now that sounds a trifle blunt, but I say it in all kindness, and were it not that I had spent my entire life on the farm, being the daughter and wife of a farmer, perhaps I would not dare make so sweeping a statement, but, dear farmer friends, I can not help believing we are at fault in that particular.

I do not believe that farming develops only the dull and prosy side of life as we are sometimes told, and I certainly resent the charge that the farmer has no aspirations above "hog and hominy." I believe that any calling in life which means a ceaseless grind for dollars and cents makes a man a being which finds no good in anything which does not bring in the almighty dollar and he becomes dull and narrow, his sympathies are contracted, his outlook shortened, and he is hardened to all the finer influences of nature. But the farmer has no monoply in this case and it is equally true of any business or professional man who makes money his god. One reason, perhaps, for this laxity on the part of the farmer, is that his life is a succession of flits from one busy season to another and, just at the time when the home grounds require the most attention, the crop must be planted and tended.

In our desire to adorn our grounds and make of them bowers of beauty the question of sanitation must have first consideration. Plants, vines and trees may be used in prodigality, provided always that they do not exclude sunshine and air to the extent that cellars become damp, closets mildewed and pantries mouldy.

The house and porch may be made attractive by the grace and beauty of vines and flowers and climbing roses. A few dollars invested in seeds and shrubbery will work wonders in transforming a plain and unattractive farm house into a charming and attractive retreat.

The average back yard is not a thing of beauty, and when it becomes a receptacle for refuse, cans, scraps, etc., it is a sad commentary on the good tastes of the occupants. Cannas, caladiums, hollyhocks, castor beans and sweet peas may give privacy to a home by being used as screens between front and back yard. They can be made very effective by banking them in corners, against fences or buildings. Vines such as morning glories, moon flowers, wild cucumber, trumpet vine, Virginia creeper, Japanese hops, Madeira vines, woodbine, honeysuckle, ivies and clematis may be used to cover a multitude of sins in the shape of unsightly places, such as unpainted buildings, unattractive fences, clothes posts and screens between barn lots and house. Flowers for bed and border—"their name is legion." Petunias make an excellent flowering border, though I am not sure they are perennial in this climate.

Suppose a few families join in carrying out this idea. Can you imagine how a whole neighborhood might be made to blossom as a rose? Shall we begin a friendly rivalry along these lines?

## NEAT HOME SURROUNDINGS.

*Wallaces' Farmer.*

At the Round-up Institute held at KauKauna, Wisconsin, recently Delbert Utter read a paper on the value of neat home surroundings, as follows:

''Our reputation as individuals, or as communities, for thrift, culture, and character, depends largely upon our home surroundings. The passerby, be he neighbor or stranger, forms his opinion of us by observing how well our roads are constructed and maintained; how well our fields are fenced and cultivated, and how well our live stock is bred and housed. He notes with particular interest how our buildings are located and arranged and our manner of planning and caring for our home grounds.

''The influence of good home surroundings, exterior as well as interior, has an appreciable effect upon our lives, and has much to do with forming the habits and molding the characters of our boys and girls. The boy or girl brought up where thrift, order and refinement is noticeable on every hand, will be more likely to choose farming as an occupation than where conditions are the opposite, and the boys or girls who choose some other occupation, as many of them must, will leave the farm with a better training and with a love for the home that will make them stronger and better men and women, and they will look upon the old homestead as the dearest spot on earth.

''Financially considered, the improvement of the appearance of one's home is a good investment, as the prospective purchaser of a farm will be attracted to a locality where there is an appearance of thrift and the home grounds are well laid out and kept in a neat and tidy manner, and he will pay more for a farm than he would where such conditions do not exist.

''The farmer is largely a creature of circumstances—he is seldom a chooser of his home; he may be heir to the old homestead or may be obliged to purchase according to his ability to pay. As a consequence, buildings have been located and built by others, often with little regard to appearance, and ofttimes with little attention to convenience.

''The early settler had little thought towards beautifying his home; his whole intent and purpose was in making the land available for the growing of crops; his whole energy and strength was applied to the destruction of the forests. Every tree seemed an enemy to be ruthlessly cut down, and, as a consequence, he has not a love and appreciation of what nature had done to beautify his home. The result is a barrenness about some of our Wisconsin homes that gives the traveler a bad impression of farm life. The generation that follows the pioneer has more time and should have more wealth and culture, and, what is better, an inclination and taste to make its home surroundings as beautiful as its means will permit.

''It is not so much a matter of expenditure of money, as it is of planning and arranging buildings, fences, drives, trees, and shrubs, so that they will harmonize with the natural environments. Our aim should be the same as that of the artist, as landscape gardening is picture building, and we should follow the same scheme to improve our home grounds. Our fences, hedges, and trees are the frame and background, and the house, barns, and outbuildings, etc., should be in the rear.

''Trees and shrubbery should be so placed as to give protection from the coldest winds, generally on the north and west sides, where they are most needed, and the next step should be to place them where they will afford shade and add to our general plan of improvement. Sheds, outbuildings, barnyards and parts of residence that are unsightly, may be made less conspicuous by planting trees and shrubbery to screen them from view, or by covering them with vines.

''The choice of trees is of much importance as well as the manner of planting them. Evergreens should not be left out of the plan, as they are the best for shelter, and, as specimen trees they are ornamental. The Norway spruce is well adapted for a windbreak, while blue spruce, Austrian pine, and Siberian arbor vitæ are fine for lawn adornment. A well grown and well trimmed hedge of white cedar is always admired and is useful to veil either barnyard or fence.

''Of deciduous trees the hard or sugar maple is a favorite, as it is cleanly in its habits, and less subject to insect pests than many other varieties. The elm is said to be stately, but the maple is noble, and nobility is to be preferred to stateliness. The box elder is not to be despised, it thrives well anywhere, is a fast grower, holds its foliage until late, and is shapely if kept well trimmed while young.

''The arrangement of trees should be such that it will harmonize with the natural surroundings. If we have hills and trees in the background, we choose our trees and so place them that they will appear to have grown there naturally, while, if our location is bare and nearly level, our plan may be more formal, and we may plant a row of evergreens on the west and north sides and fill in at the back and sides of house with trees and shrubbery. Hedges along the side of the yard yield a good effect if well cared for.

''The color scheme is the first thought of the artist and so it should be to the home builder. How often is the eye offended by the too glaring or too somber colors that are used to decorate our farm buldings. We can choose a white, pearl, gray, or green for our house, and, if we must use the red mineral paints for our barns they can be toned down to brown or some other neutral tint, making them harmonize with the natural colors.

''While the farmer can not be a landscape gardener, or afford to employ one, he may, by study and observation, learn how to improve his grounds. We say improve, for there are very few who have had a chance to plan them, as that has been done by others.

''When we speak of the home grounds we do not mean the front yard alone, but the back yard, the barnyard, the garden, the roadside, and the adjoining field as well. Neatness is the first requisite in our improvements, and is as necessary outside as inside our home. Outdoor improvement clubs have been organized in our cities with the object of bettering home aspects, and each member agreeing to plant at least one tree and spend one day in cleaning up, repairing or removing old fences, renewing walks and drives, planting shrubs and vines, and adding as much as possible to the attractiveness of their homes.

"The farmer's wife has her day of cleaning the dooryard, and she should be seconded in her efforts by the men folks. The whole premises should be cleared of debris that has been accumulating these many years. There is that old brush heap you left last spring or the year before, intending to burn it next day; there is the old wagon box, the old hayrack, perhaps a woodrack, and the old crate in which the pig was shipped, all thought to be too good for fire wood or kindling, but now too rotten for that purpose, and only good for bonfires. Perhaps there is little time to spare at this busy season, but if care is taken to keep things cleanly much of this yearly work will be avoided.

"The general appearance of town and country is improved by this organized effort, and the influence upon others is of importance.

"The lawn should not be a combination of flower garden, orchard and nursery. A few trees that are neat in habit of growth may have a place in front and at the sides of the house, but a good expanse of lawn should be in view from drive and street. The lawn mower should be used often and the rubbish picked up; hedges trimmed in their season, vines trained, and trees watched for vermin. This care, while it takes time, causes us to study nature's laws in growth of branch and leaf, gives us a better appreciation of country life, and we are encouraged by the expressions of commendation of friends and travelers.

"We should not forget the flowers, for a taste for flowers should be encouraged in every household. It has been said that a person that loves flowers can not be really bad. Flowers, like children, thrive best when loved and given the care and watchfulness that goes with love. Flower beds may be at the side or in the back yard, while for cut flowers they are better grown in the garden. There is more pleasure in growing flowers in the back yard than elsewhere, for they are within view of the busy housewife and are nearer a water supply, and are more certain to receive frequent attention.

"Anything that is worth having costs money and labor, and this is true in beautifying our homes, but I think it is well expended, and it is our duty to spend all we can afford for the conveniences and some of the luxuries that make farm life enjoyable. With the modern methods of heating and lighting our houses, with free rural delivery of mail, bringing daily papers to our door, with telephone connection of town and country, and electric railroads reaching every hamlet, our position would indeed be enviable."

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## SHALL I MOVE TO TOWN?

*Wallace's Farmer.*

The practice of selling or renting a farm and moving to town has become quite general over almost the entire Mississippi valley. Farmers who do this are called "retired" farmers, and it is no small tribute to the resources of any State or country that the farmers are about the only class of men engaged in active employment who are able to retire after they have passed middle life. The merchant, the lawyer, and the doctor seldom retire. The officeholder seldom retires voluntarily, but, fortunately, he is often "retired."

This problem of whether he should retire and move to town is one of the most serious that ever the farmer is called upon to solve. Generally it involves the entire future of the younger members of the family; changes, in fact, their whole course of life. It has very important bearings on the life and happiness of the farmer himself. Our readers who have this problem under consideration will, therefore, not take it unkindly if we discuss the subject somewhat in detail.

The reasons usually given for moving to town are various. Those given by the man over sixty years of age are the following: First, "I am too old to do a full day's work on the farm, therefore, I will retire, move to town, and take life easier." It is quite true that when a man passes sixty, or in some cases fifty, he is much less able to do a hard day's work than before. His joints become stiff, his fingers are all thumbs, and he gets out of breath when he chases the fractious horse or tries to drive the old sow out of the potato patch. He tires more readily after a day's plowing, and is convinced, whether he will or not, that he is growing old.

He has not, however, become useless on the farm because of any or all of these things. He has had a lifetime of experience and observation and has qualities which the young man has not had time to acquire. When a man thinks about retiring, his head, if he has used it to good purpose, is worth more dollars per month to the farm than the work he can no longer perform as compared with his younger days. The old man's place is not to do a hard day's work but to direct and plan and allow others to execute.

This brings up the second reason for moving to town; namely, it is almost impossible to get help either in the field or in the house. Unfortunately, this is true. Help never was as scarce on the farm as it has been in 1904, nor has it ever been of poorer quality. Not because the young men of today are less intelligent than heretofore, but because the improvements in farm machinery and in methods of feeding and caring for stock require a higher degree of intelligence and greater skill. Farming is fast becoming a profession, or business, requiring skilled labor. Formerly we bought muscle when we hired men; now we buy brains and practical experience as well as muscle. The young men who have not brains enough to do farm work are being driven to town to work on the streets or on the roads, or in some line of business where they are required to do but one thing and that becomes automatic from habit and does itself. Nor is it likely that things will be any better soon. The demands on the hired man in the way of intelligence and skill will become greater and greater every year. The time will come before very long when labor will be more or less of a drug on the market in the town or city, but this labor will be useless on the farm.

We suggest a better way out of the difficulty than moving to town. Let the man past middle age rent his farm to the brightest young farmer that he can get hold of, and give him, to use a common expression, a good "lay." Let him, however, retain in his hands the rotation of crops generally, and give directions as to how the farm shall be managed. Let him build a small but comfortable house for himself, retain one team, a cow, and enough acres of land to keep him busy and go into some special line of farming; such, for example, as raising seed corn, improving grains, breeding improved hogs, or poultry, or bee keeping—anything to keep his mind busy and keep himself as much as possible under the old environment.

The third argument for moving to town is: ''I want to give my children the benefit of a first-class education.'' Now, it is quite true that the country school is not what it should be. It is equally true that so far as the mere imparting of knowledge is concerned the graded school in the city or town is vastly superior. The inferiority, however, of the country school and the superiority of the city school is largely the result of the custom of farmers moving to town. The country schools are comparatively empty; the city schools are overcrowded. However, the farmer must bear in mind that education does not consist solely in imparting knowledge. That really is but a small part of it, and the farmer who moves to town solely for the purpose of giving his children an education in one line is quite likely to give them a worse education in another. They are removed from the simplicity of the farm life. They do not acquire the sterling virtues of the farm boy or girl. They acquire much more expensive tastes and habits. They are very apt not to learn the first and most important element of all education, the habit of steady and persistent work. We had rather take our chances with a boy or girl reared wholly in the country and educated at a first-class country school than one educated in town at the graded schools. The chances of success in life for the children are not increased but diminished by moving to town and being educated in the graded schools. The school is all right enough but the accessories to the schools are frequently all wrong.

The fourth argument is: ''I want to be near church and prayer meeting.'' A sufficient answer to this is that as a matter of fact people in town do not attend church any better or even as well as the farmers in the country. The habit of church going is peculiarly a country habit, and while it involves in the case of old people more or less sacrifice, and more in the country than in the town, we doubt if the retired farmers discharge their church duties as well as they did when they were in the country.

The fifth and last argument is this: ''I have earned a rest, and intend to take it.'' If by rest is meant the opportunity to do nothing, we do not believe any man ever earned it, and if he did, he is very foolish in claiming it. Rest kills men; moderate and wisely directed work never does. A man is a good deal like a machine. He rusts out much quicker than he wears out. If a man who is past middle age expects to live out his days, he must keep his mind active. He must have something to do in which he is vitally interested. Look around at the hale, hearty old men, whether in town or country, you will find that they are almost invariably men who are constantly thinking and planning, who take an interest in all things around them, and are especially interested in young people. The remark is often made that this man or that man who is in the seventies or eighties is as greedy for money as he ever was in his life. These men are grossly misjudged. Ordinarily they do not care for money. They are simply working to prolong their lives. They know that if they quit work the undertaker will find a job before long. They understand that the mind is the essential part of man, that the body can not live long after the mind ceases to be active, and hence they find pleasure in carrying on their ordinary work, not as drudgery, not for the purpose of hoarding money, but simply for the purpose of prolonging life and enjoying it.

Herein lies the great objection against retiring or moving to town. The retired farmer in town is a fish out of water. He is usually greviously disappointed. When he was in the country the groceryman and the merchant were anxious for his patronage. They were glad to see him and gladder still to see his wife and daughters come into the store. A candidate for office would frequently run out on the street to shake hands with him, ask how things were going in his township, inquire after his crops, his live stock and his wife's health, and in various ways give him to understand that he was a good deal of a man in the county—a man of influence and power. When he moves to town these classes of people all drop him out of their thoughts. He is no longer an influential man in the township. They know that he is disappointed in the cost of living in town; therefore, that he is disposed to economize. They regard him usually as a hindrance in the way of securing public improvements, and, in fact, as a rather undesirable citizen. His life training has been different from theirs and he is driven to associate with other retired farmers. Nearly every one of them has his own disappointment, if he will confess it, which disappointment does not decrease by comparing notes. There is constant danger of drifting into the habit of sitting on store boxes and discussing finance, declaiming about the shortcomings of tenants, telling about the things they did when they were boys, and about the big crops they grew on the farm, none of which tends either to lengthening days or substantial comfort.

There are cases when the removal to town is a wise one and about the only thing in fact left for a man to do. The man's own health sometimes demands it; oftener the health of the family. What we wish to impress upon the minds of our readers who think of moving to town is this, that it is one of the most important moves that a man can make in his entire life, and that it should only be made as a last resort, and only then after a thorough investigation of the effects which retirement will have upon his old friends and neighbors with whom he can talk freely and fully.

We confess that our own opinions of this matter have changed with years. We once advised a very dear friend of ours to sell his farm and move to town. Two or three years afterwards he told us that he believed that we were entirely honest in our judgment in considering his best interests, but that he was satisfied that it had shortened his days, and in this we are firmly convinced that he was entirely correct. We do not advise our readers who are contemplating this movement not to move to town, but we do say that it is a step that should be taken only after the most serious and careful consideration.

## STAY ON THE FARM.

*Chicago Drovers' Journal.*

An inclination for a profession can as easily be cultivated as a taste for any article of food. Man in a large degree is the architect of his own fortune, and the difference between the successful and unsuccessful business ventures of society is due to the improvement of opportunities. In farming the opportunities of success often exist without the disposition to improve them. The same is equally true in all professions. The unsuccessful man can retrospectively see the mistakes which induced his failure. Thousands are on the farm who no doubt are contemplating making a change to some other calling. Perhaps agriculture appears to them menial drudgery, and in perspective other vocations appear to offer greater attractions for livelihood and competence. In most instances they find the glamour of success in new fields of industry a delusion.

It is certain that whoever cultivates their land is sure of a living and often a moderate fortune. To own but a small piece of land is to acquire a large measure of independence. The farmer is the personification of self-reliance, as he depends on the exercise of personal judgment and individual effort. Diligence and punctuality are imperative to achieve success on the farm. There is a vast difference between the farmer who owns the land he cultivates and the employe in a city whose position is always precarious, employment depending largely on the changes in industrial enterprises. How many are employed in cities whose ambition is to acquire capital enough to buy a small farm? How the heart is inspired to economize to realize what appears an Eldorado. Not so with the young man on the farm; he already realizes the manly independence and luxuries obtainable only in agricultural pursuits. There are ten reasons for staying on the farm for one excuse in experimenting in other vocations. The fact that the pursuit of agriculture leads to wealth is demonstrated in every rural community. Every locality has its examples of men who commenced to work farms without capital other than vigorous health and laudible ambition who have acquired a competence. In no occupation is a man the architect of his own fortune more than in operating a farm. The opportunity for betterment of environments and increase of income are more numerous than in any other profession. The young man who is content to stay on the farm and will intelligently try to keep abreast of the improvements in agriculture is assured of success.

## AFTER THE AIM THE WORK.

*Breeders' Gazette.*

Admitting that a farmer visits the various live stock shows, makes up his mind as to the breed which he likes the best and then purchases pure bred or feeding animals to fit, there has yet been taken but one small step. A right beginning is but a small part of the great work of the breeder or feeder.

It is plain from many letters received at this office that some men who buy pure bred or well bred animals on the farm do not know how to take care of them. Scrub care means scrub animals. Does any one suppose that if the elder Marr had begun with his Missies, his Princess Royals and his Roan Ladys and let it go at that, not caring how they were fed or stabled or how they were mated, or if he had mated with them any sort of a bull that was called pure bred, he would ever have built up the magnificent herd that was dispersed at Uppermill the other day? Here is the essence of this proposition. The stockman can not win without definity of aim, and the term means everything in mating, feeding and care. The mere acquisition of various animals that have won prizes or produced prize winners in other hands means little or nothing. That under certain circumstances they have won prizes or have produced prize winners means only that under similar or improved circumstances they will do as well. Lower the surroundings one iota and the result will be shown immediately. Therefore there is absolutely no sense in any farmer purchasing pure bred stock unless he has his mind fully made up to give it pure bred care. This is very much of an old story, but the admonition can not be too frequently repeated. This should not discourage any farmer from purchasing pure bred animals. He should, however, before doing so have thought the matter out carefully to the end that he may be prepared to care for them properly. It is beyond question that the gospel of good blood has received more persecution on account of scrub fed well bred animals than on any other account. Take the grandest pure bred cow that ever won a ribbon in a show ring, subject her to care that would do justice to a scrub and what between the straw stack and the barbwire fence her breeder would not know her in twenty-four months. Hence the point is that no farmer should lightly undertake the maintenance and reproduction of pure bred animals. If he has not first studied out the principles governing the industry he would far better stick to his scrubs and never get beyond them.

Breed and feed go together. It has been under conditions generated by high feeding and good shelter that the improvement of cattle and other farm animals has been wrought, and without a continuance of such conditions success can not be attained. Here is where the beneficent influence of the educational factors now at work should be chiefly felt. Time and time again have farmers contended that they could not afford to keep well-bred animals—it cost too much, it was a rich man's game. Never was there a greater fallacy, but it has been a hard one to prove and it is only the superior education of the rising generation that can be trusted to improve thoroughly the flocks and herds of America. The older generation of farmers has for the most part proved how not to do it. The younger and rising generation is learning how it is done, and there is no doubt that the more young men attend the agricultural colleges the greater will become the distribution of pure-bred live stock on American farms. The combination of the wisdom of the two generations should lay the foundation for many a famous American breeding establishment. Nurtured in youth amid the hard surroundings of a frontier or at least pioneer life, the elder farmers have learned well the value of a dollar. According to their lights they have striven under the conditions governing their locations as no generation has ever striven before to gain a livelihood, make headway and do justice by their families. At the present time most American farmers are prosperous.

Now is the time for them to take advantage of that fact, and by sending their sons to agricultural colleges and in all other ways assisting them in the pursuit of knowledge to push forward the advancement of American agriculture.

For a time at least this advancement must be in a measure a sort of partnership concern. The young can not succeed without the consent and aid of the old. The old can not hope to have their names honored by posterity unless they hand down to their sons a rich legacy of learning. Let no farmer think that the work of breeding good farm animals—cattle if you will—is the work of a year or a decade. Once more look upon the instance of the Marrs, father and son. The elder laid the foundation, broad and deep. The son built high the superstructure; the net result—that magnificent triumph of agricultural architecture of which the enforced wrecking has been the subject of so much legitimate lamentation. And here is a principle which must not be lost sight of in the breeding business. Conceived in a spirit of infinite patience, it must have time. The wise man is he who is not willing but determined that his sons shall take up the work when he is compelled to lay it down. The idea of permanency must pervade every breeding venture. Does any one suppose that the results following the later matings of the Marr females recently sold will even equal the results that would have accrued had these females remained in a body at Uppermill? It is not possible. The all-important factor of the master's eye has been eliminated. This does not say that some of these cattle have not gone into the herds of breeders as capable as the late W. S. Marr. Possibly some of them have, but the same unending policy that made the herd great perished with its formulator, leaving in its stead and place a harvest of golden guineas such as never before was reaped by breeders of Aberdeenshire Shorthorns.

Therefore while we counsel the purchase of pure bred stock by the farmer, we do so only under the condition that the speculative spirit be entirely eliminated. Definity of aim must include steadfastness of purpose, a purpose so steadfast as to include the work of generations. Every one of the agricultural colleges is equipped in some shape to preach the doctrine of good blood in convincing terms. Let the sons have the full benefit of this offering so freely made. The voice is not crying in the wilderness today, but aloud in the market places for good cattle, sheep, swine and horses. The sound echoes and re-echoes at the door of every farm house and country hamlet in the land. The buyers for the great packers mount their horses and ride from pen to pen each day, seeking for seven-cent cattle and finding few. At every turn they are met by offers to sell for two cents less. They pay no heed and continue their almost bootless task. Does that not prove that good cattle are needed? Not long ago a good feeding farmer sent a nine-year-old Short-horn cow that had stopped breeding to the shambles. She scaled 1,550 and sold for $5 per hundred-weight, gross intake, $77.50. The same day thousands of cows were sold in the same market, younger or of the same age, for $20 or less and the cost to produce was not greater in one case than in the other. That is right down on the lowest level of reasoning that can be adduced to strengthen the cause of good blood.

The time is ripe for the good work to be begun. The knowledge of the value of money acquired by the fathers, together with the knowledge of breed, breeding and feed at the command of the son present a combination pregnant of success. The farmer who does not grasp the immense benefits that must accrue to him and his posterity, not to say the posterity of others as well, by the combination of low prices for pure bred cattle, the present prosperity of the farm and the opportunities for education and training of himself and his sons on every hand does not deserve to hold his place in the procession. And what is more he will not, for the cause of good blood is winning such momentous victories every day that the reactionist must be swept backward and away.

## GOING TO THE BOTTOM OF THINGS ON THE FARM.

*J. C. Haifleigh, Before the Jasper County Farmers' Institute.*

While there can be no set rule for successful farming, as the conditions of soil and weather must be considered, on the farm, as in all lines of practical business, the aim should be to go to the bottom of things and understand thoroughly the whys and wherefores.

The farmer has many obstacles to contend with in his daily duties about the farm premises. He is called upon constantly to decide methods of seeding, breeding, feeding, harvesting, and so forth, which are of vital importance to his success.

If he would seed his land properly, he must handle his soil and put it in a good state of tilth for the reproduction of the seed. Every crop planted should be placed in rotation; that means the getting out of the soil the most there is in it with the least possible loss of fertility. The seed should be selected of the best strains and freed from impurities; which means the use of the fanning mill if home grown seed is used.

In breeding stock there comes the necessity of determining the type best suited to the farmer's conditions and surroundings. The "hit or miss" method in breeding, if followed by the farmer, means that he is a loser. He must follow some definite type, and breed for a purpose. Such a type must be selected that will mean profit every year in the face of the strongest competition.

To feed economically and not stingily so as to get the largest possible gain out of any kind of stock put into the feed lot, requires judgment and experience with thoughtful attention to details.

The harvesting of crops means a large amount of hustling at the right time, and involves a study of conditions in the reduction of expenses to a minimum. The farmer today not only must understand how to raise a large crop from his acres, and produce fine stock, but he must also understand the best methods to pursue in disposing of the crop and stock at profit.

The secret in the solution of farm problems today lies in getting to the bottom of things and obtaining a thorough understanding of the fundamental principles underlying the various lines of work carried on during the year on the farm. To do this the farmer must learn how to push on the up grade, and also how to cast in his spare time at a profit. Talk, if you will, with these farmers who are meeting with success and you will find that they are thoroughly alive to their opportunities, and when a proposition of any kind is talked, they go to the bottom of things and couple with a large amount of thinking.

A prosperous farmer was once asked "why and how he succeeded" his reply was: "I understand my busines and attend to it."

This not only applies to farming, but to all lines of business.

Many farmers make a mistake in not stopping to consider the condition of soil, weather, etc., and the result is a failure, so far as a financial success is concerned. It is not the number of farmers in this country that make it really great, but the number of good farmers.

### NAMING THE FARM:

During the past summer while in a conversation with a farmer who owns a good farm of fine Iowa soil, in high state of cultivation, and who has an elegant house and splendid barn on his place, some remarks were made about naming the farm. The proprietor, while he is proud, and justly so, of his farm, did not think it worth while to give it a name. Whats the use, he said, the land won't yield any more, the cattle won't grow any better if I do name it and the neighbors will think I am putting on a few airs. Suppose he was right in these contentions, would that be any real objection to naming the farm? A man has a right to be proud of a good farm, he ought to be proud of it, and it has a good effect upon the public, if they know he is proud of it. I think it a most excellent plan to name the farm and it ought to be encouraged.

I do not think it really necessary to have a bulletin board up at the front gate, as many of our agricultural papers advocate, yet I am highly in favor of it.

We should use letter heads on all of our private stationary, it costs but little, it shows thrift, and advertises your business.

### THE FARMERS INSTITUTE.

While the subject of Farmers Institutes may not come properly under the head of this paper, yet, I feel like touching briefly on a few matters pertaining to institue work.

In my short experience along this line, I find it difficult to get farmers interested and to take hold of this matter as they should. While our organization has only been started a few years, I feel we have not made the strides we should have done. Much good can be drawn from these meetings, if only more of its members would take hold and push, and especially those connected in an official way. While the corn show is an important factor, it is highly gratifying to note the interest taken, and feel sure that much good will come from it.

The idea has come to me, that our institute should be in connection with our agricultural society, as they are both practically along the same line, they are educators, say; have the same set of officers for both societies, as one department would throw some light on the other, while this is only a suggestion, and may not meet the approval of our members, I feel it is worthy of consideration.

At the recent annual State meeting held in Des Moines, Secretary Simpson of the State Board of Agriculture, discussed in his annual report the question of a State organization for farmers' institutes and took the ground that there should be a central organization of some kind, but it should not take from the institutes the power of arranging the dates of their meetings and selecting their speakers. He further suggested an advisory committee which would assist in furthering uniformity in institute work in the different counties.

Returning to my subject I would say in conclusion that I would not have you think that I believe farming to be a road strewn with roses, far from it, but in comparison with other industries, I know of no occupation where brains count for so much as they do on the farm.

## BUTTER MAKING ON THE FARM.

*H. A. Rudane, Luzerne, Iowa, Before the Benton County Farmers' Institute.*

Butter making on the farm for market is getting to be a thing of the past on most farms, most farmers are selling their cream to the creameries, but they would get the extra labor of making the butter on the farm well paid for if they would consider the value of the buttermilk for the hogs, and the cost of transporting the cream to the creamery.

The main thing to do to make it profitable to make the butter on the farm is to make a fine quality of butter, of which the supply at the home market is always small, and for which the consumer will pay the highest market price, anyone can make good butter if they will give the work proper attention.

The question now arises what does it require to make good butter? The first requisite is a good healthy cow well fed, for a cow in poor condition, fed with a bad quality of feed and not given comfortable quarters in inclement weather, can not give milk and cream of good flavor or quality. The milking should be done as clean as possible, and milk strained and the cream separated from the milk with a centrifugal separator as soon as drawn from the cow; the cream must then be submerged in cold water to cool and ærate, but should not be covered until cool so that the animal odor can escape; it must not be added to other cream until properly cooled, and then thoroughly stirred when added, the cream should be kept at a temperature of fifty to fifty-five degrees in a place clean from offensive odors until you have the amount you wish to churn, it should be left to ripen at a temperature of sixty degrees, and should not be churned until twenty-four hours after the last cream has been added, as soon as the cream has come to a state of acidity and has slightly thickened it should be churned at a temperature of sixty degrees; the cream should not at any time be allowed to get warm or freeze as either of the extreme temperatures will impair the quality of the butter.

The best churn to use is a revolving barrel or box churn; the butter should not be churned together in a lump, stop churning when the butter is in granular form about the size of wheat kernels and the buttermilk should then be drawn off, then pure cold well water must be poured on the butter and the churn turned forward and backward a few times and the water drawn off and fresh water put on again and so on until the water is clear of buttermilk, usually water put on three or four times is sufficient.

Now, the butter is ready for the salt, about one and one-half ounces of dairy salt to a pound of butter, must be well mixed with the butter but should not be worked more than just enough to mix the salt with the butter, and then put in a cool place twelve hours for the salt to dissolve when it can be reworked and packed ready for market.

## MAKING CIDER VINEGAR AT HOME.

*F. H. Hall, New York Experiment Station Bulletin No. 258.*

The making of cider vinegar is a familiar operation in almost every farm home. The final product is a necessity on every table, the small apples from which it is usually made are of practically no value for other purposes, the labor and expense of picking them up and pressing them are slight, and from the time the cider is in the barrel Nature does the work. Thus the process appears a simple one, easy to start, and self-operated to its termination in a salable commodity; so that the work-burdened farmer, with several barrels of cider in his cellar, may, in his few moments of leisure, think with pleasure of his farm operation which may bring him profit without further outlay of strength or money.

Yet vinegar is a food product and, as such, has come under the eye of State law; which says that to be legally salable the finished goods must meet certain requirements. Cider vinegar must contain 4.5 per cent of acetic acid and 2 per cent of cider vinegar solids before it can be lawfully sold, and frequently farmers who have made vinegar from pure apple juice only, and who have stored this under what they believe proper conditions for the proper length of time, find that their product falls short in one requirement or the other. Thus, without fraudulent intent or attempt at adulteration or dilution, the homemade vinegar falls under suspicion. Complaints of this condition reached the station in considerable number some years ago and in an effort to find the cause or causes of the difficulty an extensive investigation of the subject has been made. Cider has been pressed during different years and from different varieties of apples, and has been stored under varied conditions, with and without additions of yeast, ''mother'' or additional malic (apple) acid. In all, thirty-six experiments have been carried through periods of time varying from forty-four months to seven years. Each sample of cider was analyzed monthly for ten months and at two-month or three-month intervals after that time, attention being paid to seven constituents in most of the analyses; so that a great amount of data has been collected, of much chemical interest and practical value. As seen by the farmer, vinegar making is a simple process; to the chemist, though less intricate than many other chemical transformations, it is complex; while to the biologist, the various steps in the change of sugar in the fresh apple juice to the acetic acid of vinegar are manifestations of very complex life activities of many species of organisms, divided into two great groups, yeasts and bacteria, each group performing a specific function in the change. There may also come into action, under certain unfavorable conditions, other bacteria which hinder the useful transformations, or which destroy the products desired and thus lower the quality of the vinegar. This interplay of living organisms, sometimes for good, sometimes for ill, has not been studied in all its details, and has been considered, in this investigation, only as results were produced, the chemical transformations alone being considered.

In a general way these transformations are two: Sugar, the ordinary cane sugar and other forms known as invert sugars (dextrose and levulose), in the sweet cider, is first changed into alcohol through the fermentation action of one group of organisms; then the alcohol, by the action of a second group of organisms is changed to acetic acid.

Chemically considered, each molecule of sugar consists of six atoms of carbon, twelve atoms of hydrogen and six atoms of oxygen. When this molecule of sugar is acted upon by the proper ferments, it passes through a series of chemical changes which may be said to result, finally, in splitting it up into two molecules of alcohol, each containing two atoms of carbon, six of hydrogen and one of oxygen, and two molecules of carbon dioxide gas, each containing one atom of carbon and two of oxygen. This may be expressed in the form of an equation:

$$\underset{\text{Sugar}}{C_6H_{12}O_6} = \underset{\text{Alcohol}}{2\,C_2H_6O} + \underset{\text{Carbon Dioxide}}{2\,CO_2}$$

Theoretically, we should be able to get from one hundred parts of sugar by weight, about fifty-one parts of alcohol and forty-nine parts of carbon dioxide; but because of evaporation and certain minor chemical changes we can get in practice only about forty-five to forty-seven parts of alcohol or less.

After the alcohol is formed, the organisms which act upon it begin the transformation to acetic acid. In this process oxygen is taken from the air. The result may be similarly represented by an equation:

$$\underset{\text{Alcohol}}{C_2H_6O} + \underset{\text{Oxygen}}{O_2} = \underset{\text{Acetic Acid}}{C_2H_4O_2} + \underset{\text{Water}}{H_2O}$$

Theoretically, again, we should obtain from one hundred parts of alcohol about one hundred and thirty parts of acetic acid, but we usually get less than one hundred and twenty parts. So, starting with one hundred parts of sugar in the apple juice, we may get under favorable conditions from fifty to fifty-five parts of acetic acid; therefore to have vinegar with 4.5 per cent of acetic acid, we must have juice containing not less than 8.5 per cent of sugar.

This percentage, however, is found in practically all ripe, sound apples, although in a record of about one hundred analyses of eighty varieties of

American-grown apples, made at this station, in Washington, D. C., in Pennsylvania and in Virginia, five samples, of as many different varieties, were too low in sugar to produce vinegar of the required acidity. The sugar in apples reaches its maximum in ripe fruit, being low both in those that are green and those that are over ripe. It averaged, in the apples used in the tests at this station, 13⅓ per cent, and varied less than two per cent either above or below the average. A somewhat surprising fact to those not familiar with the chemistry of the subject, is that "sweet" apples do not owe their sweetness to the large percentage of sugar but to the small amount of malic acid they contain. For example, the sample of Red Astrachan juice contained 10.16 per cent of sugar and 1.15 per cent of malic acid; while Tolman Sweet and Sweet Bough contain about the same amount of sugar, but only 0.10 to 0.20 per cent of malic acid.

Starting, then, with juice containing sufficient sugar, what are the conditions which will best promote the changes to alcohol and to vinegar and prevent loss? The sugar must first be acted upon by the enzyms, or ferments, which are produced by yeast plants. The yeast germs are usually present everywhere, so that they pass from the surface of the apples into the juice as it is pressed out, or fall into the cider from the air. It has sometimes been held unwise to wash apples before pressing them, for fear of carrying away the necessary yeast germs; but the apples used in all the station tests were washed without apparent interference with alcoholic fermentation. If apples have become dirty it is certainly best to wash them, as otherwise there is danger of introducing bacteria that interfere with proper fermentation. In ordinary cellar temperature, most of the sugar is changed into alcohol in five or six months, the change being slow during the first month, but quite rapid during the second, third and fourth months. The process may be greatly hastened by storing in rooms warmer than cellars usually are during the fall and winter months. By placing bottles of vinegar in rooms of different temperature, running from 55° to 85° F. it was found that at 55° only 2¼ per cent of alcohol was formed in three months; at 60° or 65° F. more than 4½ per cent; and at 70° and 85° F. about 6½ per cent was formed in the same time. At higher temperatures than this, evaporation of the alcohol would be liable to cause loss.

The addition of yeast also hastens alcohol formation, so that at a temperature of 55° F. cider with yeast added gave 6¼ per cent of alcohol, and at 70° F., with yeast, 7¼ per cent, both in one month. The use of any form of commercial yeast, if sufficiently fresh will probably be found to give good results.

After the yeast fermentation has been completed the acetic-acid forming bacteria begin to attack the alcohol and produce acetric-acid This process is ordinarily very slow for about three months after the sugar has all been changed to alcohol, that is during the eighth, ninth and tenth months of cellar storage; but advances rapidly from the tenth to the fourteenth month and is practically completed in two years. This process also moves more rapidly, when once well started, at higher temperatures; but differences of temperature appear to have little effect during the three months after the sugar has disappeared. Beginning with the tenth month of storage, however, and up to the end of two and one-half years, nearly twice as great a percentage of acetic acid was produced where the temperature varied from

50° to 90° F. as where it was from 45° to 65° F. The percentage of acid formed at lower temperatures never became as great as at higher temperatures, though part of the apparent increase in the warm room was due to evaporation of the water. The best results were secured at temperatures of 65° to 70° F.

It is the ordinary practice to add vinegar, especially vinegar containing "mother," to the barrels in which vinegar is making; and the investigation proved the practice a most excellent one, as the acetic fermentation was more rapid and more complete in every case where this form of inoculation or "seeding" was used. This addition of "mother" is comparable to the addition of a "starter" in souring milk, for the "mother" is produced by the growth of the acetic bacteria in the presence of air and contains large numbers of these bacteria,

It appears to be of advantage in some cases to draw off the clear portion of the cider after alcoholic fermentation has been completed, leaving the dregs; and to continue the process in new clean barrels or to wash out the settlings and return the clear liquid to the barrels. This proved of considerable advantage in the case of vinegars stored at low temperatures, but of less utility when the vinegar was stored at higher temperatures where the acetic fermentation proceeded rapidly. Possibly with cider made from uncleaned apples and carelessly strained juice the results along this line would be more striking; for the liability to contamination with undesirable germs would be greater in such cases.

In both alcoholic fermentation and acetic fermentation, the air should have free access, especially in the latter; for, as can be seen by the equation given to explain the process, oxygen must be added to alcohol to make the acetic acid and this must come largely from the air. On this account the barrels should not be filled more than two-thirds or three-fourths full with the apple juice, or with the "hard" cider. But when the acetic fermentation has ceased to be active and the amount of acetic acid is safely above four and one-half per cent the vinegar should be drawn from the barrels and strained, the barrels cleansed, the vinegar returned filling the barrels full, and the bung driven in tight.

Unless this is done, destructive fermentation may begin and the acetic acid decrease instead of increasing. In several experiments where the vinegar was held in loosely stoppered casks or bottles, it lost all or nearly all its acid, and in some cases actually became alkaline in reaction. This destructive fermentation may be due to new species of bacteria introduced, or even in some cases to the same acetic-acid-forming species which, when the alcohol is exhausted, attack the acetic acid itself.

As showing how complex may be the processes passing in vinegar, the case may be cited of four one-quart bottles of the same juice stored under the same general conditions. At the end of five years bottles a and b contained 5.74 and 5.44 per cent, respectively, of acetic acid, bottle c 2.10 per cent and bottle d gave an alkaline reaction. Bottles a and c contained nearly three times and bottle b two and one-half times as much solids as bottled.

The acid of fresh apple juice is not the acid of vinegar, but a fixed acid called malic acid. This has certain chemical characteristics which make it quite easily recognizable; and so its presence in vinegar has been considered an index to determine whether the vinegar were or were not truly vinegar from apple. But these investigations have proven that this acid disappears quite rapidly from vinegar, so that in twenty-four months it had shrunk from an average of 0.55 per cent to 0.02 per cent; while in some older vinegars it had disappeared entirely. The relation of malic acid to cider vinegar is being further studied.

The legal standard of the State for acid, 4½ per cent of acetic acid, has been upheld fully by these results; for apple juice from good ripe apples, properly managed in fermentation should and does easily give 4½ per cent acetic acid within two years at cellar temperatures and in less time at higher temperatures.

Concerning solids, the wisdom of the standard is not quite so clear. In several experiments made in this investigation, vinegars made from pure apple juice and well above the limit in acid contain less than two per cent of solids.

Among the conditions which may produce vinegar below standard are these: (1) The juice may be poor to start with because made from varieties of apples low in sugar, from green apples or from overripe or decayed apples; or the juice may be watered either directly or by watering the pomace and pressing a second time. (2) The fermentation processes may be delayed or disturbed by using dirty fruit or unclean barrels, thus affording entrance to undesirable organisms and causing the wrong kind of fermentation; the temperature may be too low to insure the necessary activity of favorable organisms; or air may be excluded by filling the barrels too full or putting the bung in too tight so that the bacteria can not live and work. (3) The acetic acid may disappear after its formation, destructive fermentation being encouraged by leaving the bung-hole of the barrel open or the barrel only partially full.

Briefly summarized, the method to be employed for the manufacture of good vinegar at home, without the use of generators, is this: Use sound, ripe apples, picked or picked up before they have become dirty, if possible, otherwise washed. Observe the ordinary precautions to secure cleanliness in grinding and pressing, and discard all juice from second pressings. If possible, let the juice stand in some large receptacle for a few days to settle, then draw off the clear portion into well-cleaned barrels which have been treated with steam or boiling water, filling them only two-thirds or three-fourths full. Leave the bung out, but put in a loose plug of cotton to decrease evaporation and to prevent the entrance of dirt. If these barrels are stored in ordinary cellars, where the temperature does not go below 50° or 45° F., the alcoholic fermentation will be complete in about six months; but by having the storage room at a temperature of 65° or 70° the time can be considerably shortened, and the addition of Fleischmann's compressed yeast or its equivalent at the rate of one cake to five gallons of juice may reduce the time to three months or less. Use a little water to thoroughly disintegrate the yeast cake before adding it to the juice. The temperature should not go above 70° for any length of time, to avoid loss of the alcohol by evaporation.

After the sugar has all disappeared from the juice, that is, when the cider has entirely ceased ''working'' as revealed by the absence of gas bubbles, draw off the clear portion of the cider, rinse out the barrel, replace the liquid and add two to four quarts of good vinegar containing some ''mother,'' and place at a temperature of 65° to 75° F. The acetic fermentation may be complete in three months or may take eighteen months according to the conditions under which it is carried on; or if stored in cool cellars may take two years or more. If the alcoholic fermentation be carried on in the cool cellar and the barrel be then taken to a warmer place, as outdoors during the summer, the time of vinegar formation may be reduced from that given above to fifteen or eighteen months. Where the alcoholic fermentation is hastened by warm temperature storage and the use of yeast and the acetic fermentation favored by warmth and a good vinegar "start," it is possible to produce good merchantable vinegar in casks in six to twelve months.

When the acetic fermentation has gone far enough to produce 4.5 to 5 per cent of acetic acid, the barrels should be made as full as possible and tightly corked in order to prevent destructive changes and consequent deterioration of the vinegar.

## HOUSEHOLD MANAGEMENT.

*Mrs. Josephine C. Skiff, Iowa Falls, Iowa, Before the Hardin County Farmers' Institute.*

Household management! When I think of all that that term implies, I am staggered as was the pendulum in the fable we read in school years ago a portion of which I beg leave to quote: When inquiry was made as to the cause of the stoppage, the pendulum replied "I confess myself to be the sole cause * * * and if you wish, I'll tell you how I took this digust to my employment. I happened this morning to be calculating, how many times I should have to tick in the course of only the next twenty-four hours; perhaps some one of you, above there, can give me the exact sum." The minute hand being *quick* at figures, presently replied, eighty-six thousand four hundred times." "Exactly so," replied the pendulum. "Well, I appeal to you all, if the very thought of this was not enough to fatigue any one; and when I began to multiply the strokes of one day by those of months and years, really it is no wonder if I felt discouraged at the prospect. So, after a great deal of reasoning and hesitation, thinks I to myself, I'll stop."

The dial could scarcely keep its countenance during this harangue, but resuming its gravity, thus replied: "Dear Mr. Pendulum, I am really astonished that such a useful, industrious person as yourself should have been seized by this sudden weariness. It is true, you have done a great deal of work in your time; so have we all, and are likely to do; which, although it may fatigue us to *think* of, the question is, whether it will fatigue us to *do*. Would you now do me the favor to give about half a dozen strokes to illustrate my argument?"

The pendulum complied and ticked six times at its usual pace. "Now", resumed the dial, "may I be allowed to inquire if that exertion is at all fatiguing or disagreeable to you?" "Not in the least", replied the pendulum, ''it is not of six strokes that I complain, nor of sixty, but of *millions*.'' ''Very good'', replied the dial, "but recollect that, although you may *think* of a million of strokes in an instant, you are required to *execute* but one, and that however often you may hereafter have to swing, a moment will be always given you to swing in.''

So, too, with women's work in the home. She may think of and plan a week's or a month's work in a brief time, but she can do but one day's work today; and what we desire to know is how we may secure, not only to ourselves, but to the inmates of our homes, the greatest amount of health, comfort and happiness for the labor expended.

I can hardly hope to say anything you do not already know either from your reading, or from that richer field of your own experience, but sometimes we like to hear the old truths over and over again.

My first rule is, *rise early*, no matter what the work of the day is to be. If this has not been your habit, it will be hard at first, but you will soon find that it is more than counter-balanced by the hurry and worry that is thus eliminated. How much stronger one feels in the face of hard work if she knows there is plenty of time to accomplish it. We must not, however, fall into the error that so many—especially young housekeepers do—of thinking there is so much time that we let the minutes and the hours slip by and are hurried in the end.

As we used to recite to our professor of didactics, '' Have a well defined next.'' Haphazard work will accomplish no more in the home than in the schoolroom.

Then, too, we must have a system about our work and follow it without being a slave to it. Yours need not be the same as mine except where our home life meets the world in general, and there, unless there is some good reason for not doing so, we should conform to the convenience and custom of the majority. The principal features in each one's system should be recognized in her own home, that other members of the family may make their plans accordingly. For this reason have a regular washday, another for ironing, another for mending, etc. Perhaps none of us have been able to find a better foundation for our system than that set forth in the old nursery rhyme:

''On Monday when the weather's fair,
I always wash the clothes;
Then Tuesday I can iron them,
Although it rains or snows.
On Wednesday I do the mending,
And always like it, too;
On Thursday I receive my friends—
I've nothing else to do.
On Friday sweeping is my task,
To clean up is delight;
On Saturday I do some cooking,
Then put all work from sight.
And Sunday is a day of rest,
I go to church dressed in my best."

With variations to suit the individual case, any woman can do more work and do it more easily than when she works without a plan.

There must be regularity in rising, in meal time, and in retiring, or the housewife's plans are seriously disarranged. To avoid this, the children should be called at a stated hour in the morning that they may be ready for breakfast unless the breakfast is at a very early hour, and even then I believe it would be better for all concerned to have the children go to bed early enough at night to awake and breakfast with the others. When once we ascertain the amount of sleep our children need, we should plan for it with the same regularity that we do for their food and clothing.

I have been speaking with the thought in mind of one woman who does the housework for the family, but in many homes there are others who are willing and anxious to share her burdens. Shall our plans extend to them? By all means, be they relatives, children or hired help. There will be less friction and more leisure for all if each has her allotted task, and holds herself responsible for it. Then it is indeed a help to the housewife, whereas, if she is helped a little here and a little there, and must look to the finishing of everything herself, she might as well have dispensed with the other's assistance. This applies to grown up help. In the case of children, the rule must be taken with some exceptions. Not that I think children may not be held responsible for the performance of certain light pieces of work, for I do, most emphatically, and think they may learn a valuable life lesson thereby, but in many cases, I believe, a child's dislike for work would disappear, in fact might never *appear*, if instead of giving her a task to do *alone*, we should arrange the work so as to have her help us about our work. In this way we should not only avoid the child's acquiring a dislike for work, but at the same time teach lessons of neatness and dispatch. The time will come when you will have to assign your daughter tasks which she must do without your help and supervision, but if she has had this careful preparation she will not disappoint you.

Did you ever stop to ask yourself why girls "just hate to wash dishes?" Try the plan just mentioned and see if their dislike does not vanish. Where there are several daughters, let each take her turn in helping you or one of the older sisters, and when proficiency is attained in one department of housework, let another be learned, and so on. The best education in domestic economy which any girl can have is to work for years side by side with a mother who seeks to "look well to the ways of her household" from garret to cellar.

One more word before I pass from this branch of my subject—whatever work you assign your daughter, be it much or little, let it be the unwritten and unspoken constitution in the family, that when that work is finished, she will have some time to herself. Do not call her to do some trifling service for you unless there is real need of it.

All that I have said so far has to do with the common, everyday work, he problem that confronts us three hundred and sixty-five days every year, but we all know there are times when the work is more than ordinarily strenuous. Take the semi-annual house cleaning periods, times when the farmer's work is rushing him and extra farm help must be kept, the spring days when the little chickens need so much of our time and attention, the fruit season with all its canning, pickling and preserving, the sewing which in large families is an ever-present question. As these busy seasons multiply, methinks the ticks of the pendulum grow fainter and fainter until they cease in the house of some weary sister who has tried to carry too heavy a burden.

These periodically busy times must be planned for just as our everyday work is, we must know our own strength, and decide what we shall do, and what we shall leave *undone*, also what shall be done outside the home. This same family sewing that is such a bugbear to so many women who have plenty to do without it, can be solved by buying ready-made or made-to-order garments which usually give better satisfaction than those we evolve in the home, and the extra cost is small. This for the woman (presumably a teacher in her youth) who does not like to sew, and when she does, finds her work disappointing, but the woman who "has a knack," will do her own sewing and send some other work away. But whatever we *do* or *do not do* we must remember that, "the life is more than meat and the body than raiment."

A friend of mine has pinned Doctor Jackson's "Secret of Health" to my kitchen calendar, and as some of the rules there given are so necessary to the housekeeper, I want to repeat them here:

1. Don't worry.
2. Don't hurry. "Too swift arrives as tardy as too slow."
3. Simplify! Simplify! Simplify!

If this rule were put into practice, what an exodus of out-of-date bric-a-brac there would be for many a home, and how much lighter the work of dusting, what a diminution in the number of microbes thus set free, and what a saving in health to the family. If we should carry this rule into our kitchens where we prepare our three meals a day, how many recipes would never see their accomplishment upon our tables, but a simpler, more wholesome, and more nutritious diet would be served to our families; and thus one might go on in an almost endless chain.

If rule No. 3 were put into practice, it almost does away with the necessity for No. 4 which is: Don't over eat, "Let your moderation be known to all men."

5. Court the fresh air night and day.
6. Sleep and rest abundantly.
7. Spend less nervous energy each day than you make.
8. Work like a man but don't be worked to death.
9. Don't carry the whole world on your shoulders, far less the universe. Trust the Eternal.

It is a good plan to keep an account of household expenses and make a summary at the end of the year. This will serve as a guide to your next year's purchases, and by comparing one year's accounts with another will show where you can afford additional outlay, or where retrench if that be necessary.

Study the problem of waste, and resolve that in your domain it shall be reduced to the minimum. Too many people think economy is a going without something they desire, whereas true economy consists more often in an abundance with little or no waste. I recall two women, sisters, who illustrate this difference admirably. Both were hard-working, energetic women, and each had several children who, upon the death of their parents inherited a snug little sum of money. In the one case it was the result of good management, executive ability, a knowledge of what the market demanded. In the other, of the most rigid self-denial. Had you visited these two families you would have pronounced the one family prosperous, the other poor.

There are still many things of which I wanted to speak, as having kitchen, dining-room, pantry and cellar just as convenient as possible, plenty of cooking utensils of a good quality, and then the best of care taken of them, a range that is faultless, cistern pump in the house, or near the kitchen door, and plenty of shelf and cupboard room, of replenishing the bedding, table linen, etc., during the winter when their is more leisure; and of various other things, for you see this subject is practically endless, but time forbids, and I must say what it were best to say even if all else were left unsaid, namely this: Be the master-workman; get your work so well in hand that it does not drive you, that you have time to seek improvement in this and other lines, and be satisfied with nothing short of success.

## EDUCATE THE FARM BOY AND THE FARM GIRL.

*John Thompson, Associate Editor Farmers' Tribune, Before the Osceola County Farmers' Institute.*

We are living in an age of keen competition—in an age where we must call upon every resource at our command if we expect to achieve success. We are not living in an age where mere physical power is valued as the highest attribute of man, but we are living in an age where skill and mental power, forethought and ability count for more than mere brute strength.

The customs that prevailed when our grandparents were children are obsolete. With all due respect for our ancestors it must be admitted that in the natural course of events we have outlived their methods. It could not be otherwise for we have labored diligently. The world can not stand still. Science teaches that nothing in nature remains at a standstill. We must either advance or retrograde; we must either go forward or backward. We have chosen the former, not from our own initiative perhaps, but because our good parents and remoter ancestors were moving in the same direction; we have simply marched forward, onward and upward in all lines of human endeavor in obedience to the unswerving laws of evolution. There was a time in the history of the world when intelligence, brain power, courage and honor did not count for so much as they do today. There was a time in the evolution of the organic world when brute force or fleet foot counted for more than it does now. At that time, gigantic creatures, animals of great strength and power were developed because it was advantageous to them to develop strength or speed or cunning as the case required. The law of the survival of the fittest has ever been in operation and it remains in full force today. Only the fittest survive in any age. This age demands that man must become intelligent; this age demands that we must cultivate our intellectual faculties, our moral force. We can not go against the laws of nature, we may think for a moment that we can, but sooner or later we are bound to find that we must bow our heads and succomb to the inevitable. If, therefore, our future success and prosperity, our future happiness and comfort depends upon our intellectual qualifications, let us adapt ourselves to surrounding conditions and be among those who shall survive. If we ourselves have not had the advantage of an education beyond the common school, let us not stand in the way of the mental progress of our children. Let us encourage them to earn their own way through school, if necessary—they can do it. Every able bodied boy or girl can find a way to attend college if he will determine to do so. Indelibly impress upon the minds of your boys and girls the old, tried and true motto, ''Where there's a will, there's a way.'' Encourage them to go to school. Nearly all farmers are able to give their children an education, but, not all, quite realize the importance thereof. They say, "My boy is going to stay on the farm, the schools can teach him nothing about farming. I never attended an agriculture college and I have made a good living, so can he.'' They point to a few men like Abraham Lincoln, John Jacob Astor and scores of other self-made men who did not have the advantage of an early education but who became eminently successful. That is all true, but remember that since the time those great men lived, and while they lived, millions of people have died who would have been vastly helped by educational advantages. We seldom read about the poor and the ignorant; it is the few successful people who are constantly held up before us as examples, and that is right, we should aim high. Emerson said: ''Hitch your wagon to a star.'' It would not be to our advantage to extol the unpatriotic man, the unsuccessful man nor the inebriate.

There is greater need for education today than there was in the days of Lincoln or in the days of our earlier patriots. Greater need for education exists today than ever before existed in the history of the world. Why is this? What may be the reason? Why was it necessary in the early days when our forefathers were barbarians that they should be strong and vigorous men and women? You answer, ''because they were in a continual state of war with their neighbors.'' Exactly. When our fellow men are physically strong and vigorous and they use that strength in subjecting us to their will, it is quite evident that we too must be physical giants if we hope to hold our own. Today, as in the early history of our race, man has to meet man in the battle for life, the law of the survival of the fittest still reigns supreme. You must be the equal of your neighbor or he will outdo you in the race for bread and butter. Our neighbors of today, however, are not physical giants but they are mental giants and we must be their equals if we expect to remain in the race. Is there any escape from this struggle for mental supremacy? Positively none. A battle royal is raging n the midst of a peaceful population and your children will be forced to enter the arena when the proper time arrives. Prepare them for the struggle; educate your boy; educate your girl and educate yourselves.

Some one asks, ''Who are those gladiators whom the boys and girls in the quiet rural districts must meet when they enter the industrial field, the field of production?'' They are the people of the world. They are not confined to the United States, they are not confined to America nor are they confined to Europe and America but they are the people of the entire world. Competition today extends to the remotest corner of the earth. Civilized man is in competition with uncivilized man. The man of many needs and nececssities is in competition with the man of but few needs. Those who dwell in beautiful residences are in competition with the uncivilized who dwell in simple huts. Not only that, but we are in competition with the keenest brains, the shrewdest manipulators the world has ever seen. In order to compete with the latter, in order to compete with the world, we must educate our boys and girls.

Let us see what has happened in the educational world during the past three decades. Our common school system has advanced in a remarkable manner, the annual attendance in the United States has grown from 30,000 in 1870 to 650,000 in 1900 while the average number of days that these pupils attend has increased from forty-eight to seventy per year during the same time. By turning our eyes towards the high schools and colleges we find that in 1870, using round numbers, there were enrolled in our higher institutions of learning 52,000 students. In 1880 the number had grown to 142,000. In 1890, to 369,000 while in 1900 we reached 754,000. Or, stating the same facts in other words, during the last thirty years our population has doubled while the percentage of students who attended higher institutions of learning has increased seven-fold.

What does this growth and development mean? It means that education is becoming popularized as it never has been before in the history of the world. It means that if we would have our children remain in the race we must give them an opportunity to fit themselves to take their places alongside the educated man of the future. It means that our children will have greater need for education than we have had or ever will have. These figures mean much, they tell a big story but they only tell half of the story and perhaps only one quarter of it. As a general rule, the man who enjoyed the privileges of a higher education some thirty years ago did not enter the industrial field, he did not come in competition with the business man, with the mechanic or with the farmer. Not so today. The large manufacturing companies are looking for educated men to take charge of different branches of their business. The large farmers are beginning to look to the agricultural colleges for men to run their farms. The manufacturers of dairy machinery come to the agricultural colleges to get men to represent their business on account of special knowledge which they have acquired at these institutions. Representatives of every agricultural college of any note can testify to the fact that they are constantly receiving inquiries for bright young men as managers of farms, creameries, orchards, nurseries and various other industries. Therefore, if you wish your boy to be a prosperous farmer in the future send him to an agricultural school. If you are dreaming that your daughter may some day become the happy wife of a prosperous farmer, send her to an agricultural school; if you wish to be up-to-date yourself on matters of vital interest to you in your immediate business, do as thousands of farmers have done during the last few years, attend the short course for farmers at the agricultural college in your own State. There are many things to be learned at those grand institutions of learning for both young and old. The agricultural college has passed the experimental stage, it has proved itself worthy of a place among the greatest colleges in the world. It is here and it is here to stay. It is no longer a baby that has to be nursed but it is a strong, vigorous, rapidly growing child which will soon grow into a powerful man of tremendous prestige.

Agriculture has ever been the backbone of all industries. From the sturdy sons and daughters of the farm the city population is recuperated. The city people have had many advantages over the country population. They have had better schools, better libraries, better facilities for communicating with their fellow men, and still the farmers have held their own in spite of heavy odds. But conditions are rapidly changing; the farmer's turn has come. Rural free delivery is here, the telephone has arrived, good roads will soon materialize, and agricultural education in the shape of schools, colleges, institutes, agricultural press, is making gigantic strides. The farmers are beginning to realize their own importance as they have never realized it before, and I foresee the brightest future for members of the coming generation on the farm if they will avail themselves of the educational advantages at their disposal. But, you say, "What are some of the lines of work in which the country youth should engage?" In a nutshell, they are better methods of farming. Practical experience as well as scientific investigation have made it clear that the field is open to us to improve every crop we grow on the farm. We can, if we will go about the work intelligently, increase the annual average of our corn crop from thirty-two to fifty bushels per acre; we can increase the yeild of our oat crop from twenty-eight to forty-five bushels per acre; and our barley from twenty-four to forty bushels. There is no theory about this; it has been done; it can be done again if we will determine to put the necessary energy and knowledge to the wheel. What is true of grains is true of grasses and other farm crops. They are as plastic in our hands as putty; they can be moulded into almost anything we wish. The question simply rests with you, with each one of you—will you undertake the work?

Those of you who have given some thought to the dairy industry know what a field this offers for energetic men. Think of it! Our annual yield of butter is only 150 pounds per year per cow. Is any argument needed to prove that intelligence will do wonders in the cow barn? If you are doubtful, study the results obtained by many prominent dairymen scattered all over the country. Hundreds of them have bred up herds that are averaging 250, 300 and 350 pound of butter per year, but alongside of these herds there are thousands that produce less than the cost of feeding and caring for them. The field for improving the live stock on the farm is large. We have many pure-bred cattle in this country, but this very moment we need ten times as many. Only one per cent of our cattle are pure-bred; ten per cent of them ought to be. It costs no more to keep a pure-bred animal than a scrub, but the farmer will yield double to three or four times the profit of the latter.

Not only do we need to improve our dairy cattle but our beef cattle as well. We can no longer afford to run corn through a sbrub steer—it does not pay; when corn is worth from thirty-five to fifty cents per bushel and beef is selling at from four to six or even seven cents per pound, we must have steers capable of making the best possible use of their food.

It is not necessary to confine these remarks to grains and cattle, they apply to horses, sheep and hogs as well, though in the hog line we have made rapid strides as far as breeding is concerned. Of equal importance with the points mentioned are feeding problems or the management of your soils in such a manner as to keep up their fertility. Those who are inclined along horticultural lines will find equally important theories for consideration in that field. The fact of the matter is, there is practically no end to the improvement of farming in general. It is a great work. Agriculture offers a greater field for the exercise of intelligence than any other industry and there is positively no exception to this statement. It is a work that will be renumerative, it is a work that is philanthropic, it is a work that is elevating in every sense of the word, but the major part of it must be left to the members of the younger generation. They are the men and women who will have to fight the great industrial battle of the future. We can lay down no hard and fast rules for their guidance but we can instill into their minds the necessity of thorough preparation for their tasks.

Therefore, in conclusion, I charge you, father and mother, urge your boy and your girl to acquire the best possible education to meet their respective duties in the future. Young man and young woman, do not attempt to go against the unvarying laws of nature, if you expect to pursue the noblest calling on earth, the buiness of farming, then, because advancement today lies along mental rather than physical lines, because you must compete with the whole world, because educational standards are being raised in all walks of life and because you wish to be the equal mentally, socially and financially of everybody in your community and State, become educated in your special line of work. Elevate your calling, dignify your labor, become men and women of ability and power.

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## HOW TO KEEP THE BOY AND THE GIRL ON THE FARM.

*Miss Vena Hawley*, *Laurens*, *Iowa*, *Before the Pocahontas County Farmers' Institute*.

Before entering upon the discussion of the subject which has been assigned to me, may I offer a word, not so much of apology, as of explanation. Whether the executive committee knew that I was one of a large family of children, born and reared on a farm and therefore thought I was competent to speak from experience, or whether they thought a subject a little more comprehensive and possibly in a lighter vein might add variety to the entertainment provided here and hence selected me as an easy and unsuspecting victim, I am not in a position to state. Seriously, however, I believe they felt that the tendency of our young people to leave the farm was really worth a thoughtful consideration in a meeting of this kind, for it is a discouraging fact that our young men and women are seeking careers in the cities and we can say with the phropet of old, ''Behold our house is left unto us desolate.''

Believing as I do, that the ''hewers of wood'' and ''drawers of water,'' the men and women with ''sun-trod faces and horn-gloved hands,'' whose toil feeds the hungry and clothes the naked and upon whose backs rests the burdens of the world—believing that these are the salt of the earth, the subject takes on a new seriousness and a deeper significance; for, if the salt has lost its savor wherewith shall it be salted? Hence, I cheerfully add my mite to the feast of good thoughts which has been spread before this institute today. The conclusions which have been drawn are largely the result of personal observation and experience, and, as a result, may refer rather to local conditions and problems than to any general characteristics of farm life; though I am inclined to believe that what is true in northwestern Iowa will be found to be largely true throughout our great middle west. In some few instances the suggestions are almost wholly theoretical, and should he accepted as mere suggestions, not as well-tested working hypotheses. If what is said shall be used as the basis for a fuller and more informal discussion of the subject by the institute as a whole, it will have fulfilled the purpose for which it was intended, and will have accomplished that which it was sent forth to do.

It is an old and familiar saying, ''God made the country man made the town.'' We have to face the fact, disagreeable as it may be, that our boys and girls are trying to reach the place where man and not God is pre-eminent, and are leaving behind them God's country, where the lilies out-rival kings in their purple and gold, where even the little sparrows are cared for and where, in ever recurring seasons, we see the fulfillment of the parable, "Behold, a sower went forth to sow."

Unconsciously to each mind recurs the everlasting ''Why?'' Why should such an abnormal state of society exist? What has infatuated the sons and daughters of the soil that they should wish to cast aside all the home ties and throw themselves into the unmerciful scramble for bread that characterizes modern city life? Can we point to any one thing and say, ''Herein lies the difficulty?'' What remedies have we ready to apply when we shall have found the cause of the trouble? Do we know how to apply these remedies when they are given us? Shall we simply discuss the question and let it drop there, or shall we do something as well as say something? Shall we shift the responsibility and say with a nudge and a wink to our neighbor, ''That was a pretty hard rub on you,'' or shall we respond to the truth when we hear it, and say, ''It is worth an effort, any way. Let's join forces and go to work?'' Would it not clarify matters a little if we could find the answer to the question, ''Why so many leave the farm?'' If we know why they leave, can we not then do away with these conditions and keep our boys and girls with us? It is as the blind leading the blind when we try to work without a definite aim in view and an intelligent understanding of the thing to be accomplished. Then let our purpose be definite if simple, our plan of campaign well worked out if not elaborate in detail, and our efforts be supported by reason and good judgment, and not be mere spasmodic attempts to bring about an irrational condition of farm life.

In general, both boys and girls leave the farm for the same reasons. There is no place there for a loafer, and doubtless, occasionally there is one who leaves simply because he is lazy. Perhaps this aversion to work may have been developed by the parents shielding the boy from all hard knocks and saying that they do not wish their boy to do what they have had to do. This often makes the boy feel that he is above ordinary farm life, and he turns into a first-class rowdy and cheap sport after a term or two in college. He goes into town where his talents will be more appreciated and ekes out a bare living, supported chiefly by self-conceit. The girl shrinks from doing the work that her mother has done. She would much prefer a life in town, where to her unsophisticated mind every one is dressed in their best and is having an easy time. How often we hear some mother remark, "I don't wish my daughter to marry a farmer. The work is too hard. She couldn't do it." It is the maternal instinct to shield her child, but often it is lovingly unwise. "Life is checkered shade and sunshine," and too much sunshine will kill as surely as too much shadow.

It is right of the young to enjoy a social hour. Too often is it the case, that there is absolutely no effort put forth along this line in our country districts. The boys and girls demand it, it does not come to them, and they go to seek it. Where? In the city, of course, which is all things to all men, instead of staying at home and making a society life for themselves in the country.

There are some girls, I am sorry to say, who would resort to almost any extremity to keep their hands white, their hair curled and their hats set at the proper angle. These long for the city life where they may do work indoors that requires no uncleanliness of person, and where they may ape the "four hundred" in walk and dress. There natures have been so dwarfed that they can see nothing but the tinsel on the surface, and when they gather the glittering baubles in their hands, they are satisfied. As one girl remarked to an acquaintance of mine, "I just hate to come home. Everything is so weedy and at loose ends in the country. You can't keep your dress clean, and after you ride to town in the wind your hair is hanging in strings over your collar and your hat is blown off over one ear." To be sure these inconveniences are met with, but isn't there something far better than these in the country that the girl had missed entirely. Boys are usually not quite so frank upon these subjects, but I venture to suggest that there might be some few of the masculine sex who whould prefer patent leather shoes and tall silk hats to the rough old plow boots and wide brimmed sunshades with a quarter section of land attached to them.

Too many of our boys and girls have become inoculated with the "get-rich-quick" disease and it has deluded them into believing that in the city is the place where you can get something for nothing, or at least approximate that condition; and that is the only place where you can see "life," as the boys put it, get among "the fellows" and the girls say "be quite a swell." They are not content to "run the same course that their fathers have run," but must, at least sow their wild oats, which is only another way of saying they must dabble in all the vices but call a halt before they are utterly ruined.

Many times the desire for a higher education than that offered by the district school induces the boys and girls to leave home. Tney feel that they are at a disadvantage unless they graduate from a high school and then take part, at least, of a college course. It is a commendable desire, surely, and all honor is due to the one who succeeds and comes home to make wider and brighter the home life of father and mother. But two often the result is that they leave the farm home never to come back. The girls become teachers, office girls, etc., and finally marry among their city associates; the boys frequently enter the professions thus spoiling many a good farmer for a third-rate doctor, lawyer or minister. Sometimes, alas, they return home too full of "high ideals" and "large conceptions of life" and desires to "reach the masses," to take up the broom and the pitchfork. They make the home folks feel that education for a farmer's son or daughter is a failure, a growing discontent springs up, and the proud possessors of "high ideals" and "noble aspirations" drift away to the seething, restless maelstrom of city life.

There are many places in the cities that are clean, well paying positions, and these can only be filled by men and women of sterling worth and character. The city consumes everything the country produces and is constantly demanding of it its best brain and muscle. Let us hope that most of our boys and girls belong to the last mentioned class. Rev. Geo. McNutt makes this statement, which doubtless many of you remember: "Out of thirty-five clerks in one bank on Fifth Avenue, New York City, thirty-three were boys from the farm." This is an unusual proportion, it is true, but it serves to show how serious the conditions are. Probably the percentage of girls in responsible positions is not so large, but it will average far higher than we would ordinarily estimate.

Though some of these reasons just touched upon may be perfectly legitimate excuses for the migration to the cities, still I think you will agree that some of these things are fundamentally wrong and are capable of being corrected. We would not wish to hold on the farm those who have a really useful field of business in the city. "Amid life's quests, there is but worthy one to do men good," and if this takes them away let us say God-speed, the city needs good men and women, but let them not mistake the call.

There is nothing which creates and retains an interest and an ambition to excel in an occupation as the sense of ownership. If there is an animal on the place which the boy especially likes, let him have it. Let the girl, also, have her share, and you have given your children one of the strongest incentives to stay with you and to help you.

Whose fault is it if the boy or girl is brought up to believe himself or herself too good to do the work the father and mother have always done? Who is to blame if they are continually hunting for easy employment at high wages, when they have always been told they should have an easier life than father and mother had? Who is responsible if they are shielded from all disagreeable tasks at home and then are found incapable of filling positions of hard work and great responsibility? The answer is so obvious that he who runs may read. The home training largely brings this about, but the public schools, colleges and universities can not be altogether exonerated, and I say this though I am fully aware that I may be severely criticised for doing so. Talk with some of the farmers here today whose sons and daughters are victims of the so-called college culture, and see if my statement is too radical.

Is it impossible for a social life to be developed in the country? Surely, in these modern times of telephones, rural mail delivery, and traction lines, young people can arrange and carry out the social functions of the community as satisfactorily on the farm as in town. There is always the inevitable lyceum and school social, why can there not be literary clubs, musical organizations, etc., in which the young people can learn as well as enjoy. The taste for these things must be created where it is lacking and this should be done in the home and the school. Brighten up the old house. Buy a few good pictures, get some books and read with the young people. Good literature is cheap. Invest a few dollars in some musical instrument if you can afford it, and enjoy it with the children. Invite in the friends of your boys and girls. Make them feel you are interested in them. Study not simply how to amuse them but how to create in them a wholesome liking for innocent fun and jolly times. Don't grow too old for a hearty laugh. It will add years to your life to be a boy or a girl again occasionally.

We are sometimes so absorbed in the capture of the America eagle on the United States dollar that we have no consideration for that which brings in no remuneration capable of being counted in hard cash. We forget that there are things in this old world of ours that can not be bought and sold, and that one of these is the appreciation of the beautiful. To quote Browning:

> "If you get simple beauty and nothing else,
> You get about the best thing God invents."

Can we afford to shut our eyes to the "best thing" and wonder why the children do not like home? Encourage the beautifying of the door yard. Let the girls have flowers and vines and shrubs. See that the trees are trimmed and placed where they show to the best advantage. Have the lawn mowed and kept neat. In a word if you can't realize your ideal, at least, idealize the real and cultivate this sense of the beautiful because it brings in such an abundant harvest of enjoyment.

For the young man or woman who wish to go to the city where they expect to do a little and get much, let us by every means try to disabuse them of this false idea. Show them how strenuous—if you pardon the use of a much overworked word—the city life really is, how it wears up the strength and vitality of one who engages in business. Take them behind the scenes, as it were, and let them face conditions as they really are. If they can once see that beneath all the rush and bustle, the glitter and shine of city life, there are aching hearts and weary hands, vain regrets and unsatisfied ambitions, they may realize that getting away from the old farm is not a panacea for all ills. Everything of value has a price, and, if we get something for nothing, be sure that something will turn to apples of Sodom in our hands.

As I have already intimated, the public school system has failed to some extent to meet the obligations laid upon it. So long as there are no township high schools and consolidated district schools, we can expect the ambitious people to go to the towns. They must do this often to compete successfully with the town bred boy or girl in any line of business. Combine the country environment with the well trained teaching force and the close classification of the town, and you have every chance to produce the highest type of manhood and womanhood the American people have yet known. This has been urged again and again by men and women grown gray in the school service of our country. but the time seems not ripe yet for the people to act. Let us hope it will be soon.

Perhaps it may be entirely wrong, but it seems to me that an educational system which teaches that the man with an idea is the master of the man with the physical power to put into effect that idea, which tends to separate one set of workers from another set, which tends to create classes and masses, and which puts head-culture before heart and hand-culture is largely responsible for the false idea prevalent concerning work and the real worth of the man who can do things with his hands. Whom do we hold up as models before the children? We select the bank president, the railroad magnate, the millionaire manufacturer, and say, "Here is a kind of man for you to emulate, not because he did so much for others but because he has a great fortune." Say what we will, we must admit the truth that our only standard success in life in these latter days has been the financial standard, and the motto we continually keep before our eyes is, "Get money. It matters little how you get it, but get it at any cost " With these things supported by our schools, winked at by our churches, and discussed by every newspaper, it is not at all surprising that some of our farmer boys and girls think honest labor beneath their dignity, and long for city life where they imagine they can get a good salary, keep their hands clean, wear good clothes, and do little work.

This is not a fanciful, but a real picture. Here is our problem. How shall we solve it? We can not shirk nor shift it. We have helped to create it, let us now help to destroy it. It will require time and effort, but let us not be discouraged for the "good can well afford to wait." It is only the evil that can brook no delay. When the man of learning shall take his poorer and less fortunate brother by the hand, when clean work shall take its rightful place in our civilization, when brain an muscle shall each recognize the others honored sphere, when strenght, simplicity and sincerity shall govern our hearts and homes, then we can hope that our boys and girls will see the beauty of the country life, its homely dignity and honorable independence and shall deem it no disgrace or sacrifice to be a tiller of the soil for God watereth and giveth the increase.

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## PRO'S AND CON'S IN RURAL EDUCATION.

*J. H. Jacobs, Superintendent of Public Schools of Scott County, Before Scott County Farmers' Institute.*

The subject originally selected for me to discuss at this meeting was Pro's and Con's in Rural Education. But the programme which appeared subsequently gives me the whole field of education. After spending a little time contemplating the enormous extent of ground to be covered and the enormous difficulties to be encountered I appointed myself a committee to limit the subject to rural education.

I understood Mr. Lau, who is your secretary, I believe, to say when I suggested that I might speak on "alterations" of various kinds that are offered from different sources as a panacea for the ills of the rural schools, that the farmers do not like to have these proposed changes discussed. I concluded almost immediately, probably rashly, that this matter should receive attention since my name was to appear on the programme. But I am of the opinion that it is not discussion of suggested improvements that is not received with favor, but the unqualified advocating of them; and if this is true we shall not be plunged into any serious altercations over the attempt to discover, if possible, the means of improving the conditions upon which largely depends the education of the rural population of our State. For it can easily be shown that a very small per cent of the pupils of the country schools receives any education besides that acquired attending such schools. It is not deemed necessary or advisable to recite volumes of statistics to prove the assertion since any one may satisfy himself by a little careful observation. To say that no changes should be made in the provisions for furnishing the children of farming communities an education would be to deny progress in the twentieth century. In methods of farming, mining, manufacturing, and transportation what changes have taken place! What changes in home and social life! Are we not progressing in civilization? And upon what does advancement in civilization largely depend? Will rural communities admit that such progress is the result of activities in the cities only? And are rural communities simply followers in the procession? To the last question I should offer a vigorous negative if I did not feel that there are others here who could do that more eloquently and effectively.

### NOT ALL CHANGES PROGRESS.

It may be asserted that not all changes are progress and that not all apparent progress is advancement in civilization. This is undoubtedly true. It is a fact, that in the effort to achieve progress we, like the pendulum, swing to extremes; this is probably necessary to discover the mean; but, be that as it may, it is much better to be compelled to retrace somewhst than to fall into a sort of Chinese stagnation.

The rural school problem has been a rich source of material for debate during the recent past, and will probably continue to furnish material for debate for years to come. A small part of it has been solved, some portions are, it is to be hoped, capable of solution in the near future. From this one might be led to conclude that it will soon be greatly reduced in importance; but it is quite probable that new elements will present themselves as fast as the old are successfully disposed of. Nevertheless, it is the duty of every one interested in the welfare of our country to assist in every legitimate effort to increase the advantages and to reduce the disadvantages of the rural schools.

### ARE NOT FADDISTS.

Those who advocate changes in anything pertaining to education are denounced as faddists. This is unjust, although there are some to whom the term may be applied appropriately. Why not call him who advocates the use of the separator in the production of butter and improved methods of planting and harvesting crops a faddist?

But before we can determine the means we must understand the ends to be accomplished; therefore, I ask myself "What kind of education should all members of a farming community possess?" Here I was reminded of my school days when I solved difficulties by asking the teacher. It occurred to me that there was a book of quotations on the shelf, and straightway I proceeded to discover a quotation covering the subject. But, alas! Not one was to be found that seemed appropriate, and I was compelled to fall back on my own ingenuity; here is the clumsy result. The rural schools should furnish its pupils an education giving them the power of mind necessary to perform the intellectual operations required of good, progressive, honest citizens of a rural community; also, the power of self-improvement. Let us take an inventory first. The enrollment varies from five to sixty. The teachers of the larger schools have under their charge the extremes of beginners and those who are about to quit school or finish the course, and all the gradations of age and ability between them. Under these conditions it is difficult for the most skillful and experienced teacher to do systematic work. The innumerable acts and duties to be performed in instructing the large number of classes and in preserving discipline often causes confusion and disorder which tends to make the work accomplished superficial and unsatisfactory. In several districts pupils are illy supplied with text-books. In a few, pupils are furnished with a variety of text-books, thus increasing the number of classes. I view the situation in Scott county from the standpoint of an optimist.

Our teaching force consists largely of good concientious teachers who are doing good work.

We have some excellent schoolhouses, some that may be classed as medium, and a few that are poor and unfit for school purposes. The outbuildings are generally in a bad condition. Some are demoralizing to those who most frequent them. Nearly all school yards have a sufficient number of shade trees in good condition. Many of the schools are fairly well supplied with the necessary apparatus, while others are deficient in this respect. Scott county is to be congratulated upon the fact that nearly all the rural schools are supplied with drinking water from deep wells located upon the school yards.

### ROOM FOR IMPROVEMENT.

There is much room for improvement, however; a good opportunity for intelligent investigation and the exercise of good judgment; and, I believe it is fitting to suggest that the improvements must come through the action of the farmers themselves rather than through State aid or additional legislation, as is so often asserted.

What must be done to give to the rural population better educational advantages? This is a difficult problem, and we shall probably not be able to solve it today, for its solution requires better gradation and classification, better attendance, greater interest on the part of parents and pupils, better supervision, teachers with special qualifications for teaching rural schools, and in some instances buildings better adapted to the comfort of their occupants. What changes must be made and what plans evolved by means of which we shall be enabled to accomplish such an undertaking?

Prominent educators intimately connected with the rural schools seem to be agreed that our hope of success lies in consolidation and centralization, with free transportation of pupils included.

At this point a few words of explanations may not be amiss.

### CONSOLIDATION OF SCHOOLS.

Consolidation means the uniting of two or more schools, or contiguous districts. Centralization differs from consolidation in degree only, that is in extent of territory included. Some districts are so located that they may be united (consolidated) without involving the necessity for providing conveyance for pupils, but in most cases it would be necessary to furnish free transportation. The term central school, as generally understood, is a school located at or near the geographical center of a school township. Pupils are conveyed to and from the school at the expense of the district. The number of rooms determines the number of teachers required, as well as the gradation and classification of the school. The school is in charge of a principal, who has, besides supervision of the entire school, charge of the advanced classes.

At this stage it becomes necessary to examine the advantages claimed for this system over the system of isolated schools.

### THE ADVANTAGES.

The advantages should also be noted.

1. That the consolidated and central districts will be furnished with better buildings, is almost beyond dispute. The rooms will be properly lighted, heated, ventilated, and furnished with the necessary apparatus. The seats will be adapted to the pupils, not the pupils to the seats. The seating in a few of our schools is a cruelty to the younger pupils.

2. The health of pupils and teachers will be promoted. This is true during the time they are at school, barring the possible spreading of disease by the association of large numbers but carrying a large number of children in open wagons over long distances every morning and evening during inclement weather, or carrying them in closed and heated conveyances in which the air would soon be vitiated would be detrimental to their health.

3. No tardiness and fewer cases of absence, and a better opportunity to enforce the compulsory attendance law.

4. Better Supervision—In a central school the principal has the direction of all the work of the grades; there is a unity of purpose, and therefore less waste of energy and time of both pupils and teachers. The work of the entire school is systematic. The county superintendent can exercise better supervision over the rural schools.

### BETTER TEACHERS NEEDED.

5. Better Teachers—This, I believe, should be read, ''better teaching.'' The same teacher will achieve better results in a consolidated or in a central school, where she has fewer grades and classes. She has ample time to prepare for the different recitations. Each class has more time for recitations. Since the number of teachers will be greatly reduced, it will be possible to increase salaries without an increase of expenditures. The tendency

of this will be to keep competent persons in the teachers' ranks instead of their drifting into other more remunerative and more congenial occupations. A fact that should not be lost sight of is, that many teachers of the rural schools have had no educational advantages except those offered by the same schools. It is safe to say that those who desire to teach in country would take the advantage of the opportunity to take higher branches taught in the central school, thereby improving the scholarship of the teaching force very materially. It is asserted that the teacher makes the school. A noted educator says: ''The teacher is the school.'' Admitting that there is much truth in the statement, it is evident to all that she must have the means of being a good school—in the form of the requisite number of pupils attending with reasonable regularity, a building supplied with appliances necessary to promote the physical comfort of both teacher and pupils, and sufficient apparatus, etc.

6. Consolidation or centralization would eliminate or close the schools having an attendance too small to do good work. There are ten schools in Scott county in which the daily attendance is less than ten; one of these having an average of four, another five, and still another six. The classes in such schools are so small it is very difficult to keep the children interested. The spirit of pleasant rivalry and competition among pupils in the same class, so helpful to the teacher in keeing up interest in the lessons, is almost entirely wanting.

7. Additional Branches—High school work, keep country population from drifting to cities. Such school would be social center. Lectures, entertainments.

8. Reduction of expenses—Reports from the States where this plan of centralization is in operation in many localities show a reduction in cost.

It is my opinion that the expenditures would not be changed materially. But the reduction of expenses is not the main object of the plan. Better educational facilities are desired. It is by consolidation of small schools principally that economy of the expenditure of school money can be effected. With your permission I shall offer a few statistics of explanation. The secretaries' reports last year show the following:

### SOME STRIKING FIGURES.

Blue Grass, No. 3, average daily attendance, 10; tuition, $4 80; Blue Grass, No. 6, average daily attendance 5½; tuition, $9.04. Allen's Grove, No. 3, average daily attendance, 5; tuition, $6.90. Butler, No. 8, average daily attendance, 4; tuition, $9.44. Le Claire, No. 2, average daily attendance, 6; tuition, $6.66. Le Claire, No. 4; average daily attendance, 8; tuition, $5. Le Claire, No. 6, average daily attendance, 7; tuition, $5.71. Liberty, No. 9, average daily attendance, 10; tuition, $3.94. Princeton, No. 8, average daily attendance, 8; tuition, $4.66. Sheridan, No. 1, average daily attendance, 8; tuition, $5.25. Sheridan, No. 3, average daily attendance, 10; tuition, $4.41.

These figures do not include contingent expenses. The average tuition should not be much above $2.25. At this rate a teacher of twenty-five or thirty pupils would receive a salary of fifty or sixty dollars per month. In seeking the remedy for the conditions which the above figures indicate we must bear in mind that the school population of a district varies greatly, being small during a certain period, then increasing in numbers for another period.

Objections—bad roads—the great and only serious objections to the central school is the difficulty in transporting pupils during certain seasons of the year.

During the spring the roads are often nearly or quite impassable in some localities in this climate. In Scott county the insufficient number of roads is a serious hindrance. Permanent improvement of the highways is a step toward better rural schools.

In consolidated districts the factor of transportation is much less important. The formation of consolidated districts should therefore meet with more favor.

It may be interesting to note the ''tendencies'' in school legislation as to the system or systems just reviewed during the year 1903. California provided for the formation of union school districts; North Dakota authorized the consolidation of schools, or conveyance of pupils; North Dakota and Minnesota made provisions for allowing adjacent school districts to unite for the support of a graded or high school.

During the last session of the General Assembly of Iowa, a bill directing the introduction of study of elementary agriculture in the rural schools received serious consideration. In other states efforts have been made with the same purpose in view. I question the advisability of introducing agriculture as a special branch at this time because the teachers have not given the subject enough attention to enable them to teach it satisfactorily. Although it is a fact that the studies of the country pupils scarcely refer to anything that concerns them in their home life or their future work, a premature attempt to have the subject taught would succeed only in bringing it into disrepute.

In some localities the subject is agitated in a manner which, in my opinion, is more apt to meet with success. There the effort is directed toward the establishment of district or county agricultural schools. Two such schools have been established in Wisconsin. Graduates of a school of this kind will be competent to teach the subject successfully, and may be said to be especially qualified to teach rural schools.

## SOME RURAL SCHOOL AND PROBLEMS.

*H. M. Ferrin, Before the Cherokee County Farmers' Institute.*

Will anyone question the truth of the assertion, *that*, our public schools with the influences which had their origin therein, has been one of the strongest factors in solving thus far, the problem of self-government, which has enabled this Nation to reach its present proud position among nations, and start out in the twentieth century as one of the leading world powers. And our public schools must be a yet more potent factor, if we are to manfully face, and intelligently solve the present and oncoming great world problems; for they can only be solved by a thoroughly intellectual, industrious and contented people.

A very large per cent of our citizens enter upon the active duties of life equipped only with the training received in the homes and public schools, as each is individually a part of the grand and complete whole, which must advance or recede, go up or down together, how essential then that our boys and girls go from these sacred institutions of home and school, which should work in unison, so trained that they will develop into honorable, useful and wide-awake citizens.

Every boy and girl should go from our public schools imbued with a patriotism that will love public purity and respect law, go from them intellectually and morally strong, that they may develop into men and women that will frown upon every species of bribery and corruption, for a corrupt and bribe-taking people can never successfully lead the way to universal peace or to the recognition of the common brotherhood of humanity.

Let the patrons of our rural public schools formulate as good a creed as the teachers' creed, then pull together with the teachers for the betterment of our rural schools, and happy results must follow.

How long, think you, can Iowa hold the present proud distinction of being one of the foremost agricultural States, if by our apathy and indifference, the rural schools become a less potent factor, which they certainly will, unless we become actively interested in their improvement and give the teachers a chance to do a more telling work.

The present inefficient or poorly directed training of our rural young people in the homes and schools is somewhat responsible for the deplorable fact that a large per cent of our wide-awake boys and girls acquire a sort of disgust for life on the farm, become enhanced while away from home attending the town or city high school, with city life; this, too, at an age when they are not qualified to settle in their own minds, which place, country or city, offers the most inducement for a useful and pleasant life. Thus it is that too large a per cent of those most needed in rural districts and for whom there is a large and splendid field for development are lost to the rural districts go to the towns. Some of these well qualified by nature, backed by the more thorough education so universally given our children of apparent promise, take first rank in business and society, but a larger per cent become day laborers with little public spirit, or drift to irreparable ruin.

The place to educate the country boys and girls for the farm or for the higher institutions of learning is in comfortable country schoolhouses with pleasant surroundings and enough of the same age or grade so that there will be some inspiration to help them forward. Then with more capable teachers, who will be forthcoming if we will only take the necessary steps to fit our young teachers that have the moral and educational requisite, into places where they may develop into better ones. Then give them good homes in which to live and make them feel at home:

Give faithful and competent teachers the assurance of long terms, so that they may be in reality a part of the community and interested in the general welfare thereof, give them nine months employment each year and a reasonable compensation.

The wages, for teachers who have demonstrated their fitness for the work, should be such, as to invite life workers to the profession.

Our State superintendent is responsible for this statement, ''The rural schools suffer more from inexperienced and poorly prepared teachers than from any one cause.''

If this be true whose fault is it? Largely ours. Our young men and women can today fit themseives for other professions or lines of work where the compensation is equally as good or better, more readily than they can fit themselves for first-class work at the head of rural schools. Then too the successful teachers either want a good home of their own or feel like paying a reasonable price for being truly at home with someone else.

Is this possible on a yearly salary of from two hundred to three hundred and twenty dollars, where all the expenses must be paid out of this?

When one stops to consider the demands made upon the successful teacher, the present outlook as a life work is one of apparent poverty. And this is one reason why thoroughly competent teachers are scarce; why young men and women of ability are looking to other fields of effort, where the financial returns are better, with more apparent gratitude for services rendered. Young men and women with ability to become successful teachers invariably have a desire to make their life work count.

The teacher's efforts are often handicapped by the opposition or by the indifference of patrons. Friends, this is one of the professions where ingratitude for faithful and competent service ought almost to be classed among the crimes.

Here is another fact one must not lose sight of: Our leading educators have steadily been raising the teachers' standard; much more is required of the person who seeks to become proficient, and this is right, for it should be the grandest of all professions.

Our State superintendent is responsible for the following figures: ''Out of a total of 22,445 certificates issued by county superintendents at last report only 3,321 were first-class; 3,479 to teachers who had never taught. Now, are not too low wages partly responsible?

Iowa, one of the boasted agricultural States, pays 29,073 teachers $6,101,036, while the grand old commonwealth of Massachusetts pays 13,023 teachers $8,516,296; nearly two million more for less than one-half the teachers. Is it any wonder that Iowa ranks along in the twenties in point of school work?

Now friends, while teaching is a noble and an honorable profession and while we feel more or less grateful to the teachers, gratitude alone will not enable them to keep in touch with ever unfolding truths, move in the best society, attend institutes and district association and occasionally state or national association, some of which are absolutely essential to good work.

Here is another serious problem; the most capable of teachers can make but little progress under conditions that prevail in some localities; parents not interested, two to seven pupils, each perhaps without a classmate, different age, different grade, nothing to inspire the individual scholar, nothing to encourage the teacher. What is the remedy? To adopt some plan whereby we may be able to consolidate weak schools.

The one mighty move and inspiration of the age is concentration of thought and action to accomplish better results.

The churches feel this grand inspiration and ever they are seeking some plan of consolidation or making more effectual their work.

The problems which confront those interested in rural school improvement are weighty ones. Suppose they are, are they not worthy our united and best efforts? If we can hand down to the oncoming generation these sacred institutions in flourishing condition, have we not accomplished one exceedingly worthy object?

Our school machinery, if you will accept the term, is too cumbersome. Here for example is a township, and perhaps a fair sample of the county, one hundred and six pupils when they are all in for the winter term. These one hundred and six would make four just ordinary fair schools. If they were properly located and graded three teachers could do most excellent work. Now what are the facts, only nine schoolhouses, nine directors, eight teachers and a part of them secured only after a good deal of skirmishing by county superintendent and directors calling an extra meeting and raising the wages. If all the schools had teachers this township would have twenty school officers and teachers for one hundred and six pupils. There is evidently something wrong.

Now do not for one moment imagine that any part of this paper is intended as a kick at either teacher, patron or school officers, for the kick would inevitably come home. We are all somewhat responsible for present conditions. We are out of tune. The problem then comes, are we willing to remain out of tune? Are we satisfied with present conditions? Not the conditions that may prevail in some particular subdistrict, but the general condition of our rural schools all over the county. Are the patrons satisfied? Are the teachers, the pupils, and the county superintendent satisfied? If you are just hold up your hands one and all and we will quit right here. You are not satisfied and we are all right square up against this problem. Can we as a county agree as to what some of these difficulties really are, and with head, heart and hand unite to overcome them.

If so, we should agree on some plan that will practically be general throughout the county. In townhips where we have the district township with nine directors, with no compensation and too often no thanks for what they, with many difficulties are trying to do, could we not materially improve the present plan, by making the township the unit of organization? Townships with rural independent districts to adopt some plan. Then with no subdristricts, have a board of directors consisting of three members chosen from the township at large by the voters thereof at the annual meeting, on the second Monday in March. We should so arrange that only one of the three be elected each year. After such a plan had been adopted would it not be wise to provide also that the directors so chosen should receive, say, two dollars per day for three days in the year, the necessary annual meetings and one day which should be arranged for all of the directors of the county to meet in conference with the county superintendent.

Then we have this problem: What about our nine schoolhouses, some that even now serve no purpose save they might occasionally break the wind off a stray cow that had sought shelter behind it. We have others where teachers who have been to our State normal school, teachers of promise if we could only give them a chance, and others where teachers of experience are trying to serve the district, the State and the Nation, training from two to six pupils. Is it any wonder that teachers are discouraged and seek other fields of labor? Is it any wonder that children are dissatisfied and do not care to go to school? Is it any wonder that patrons complain of progress made, when there is so little encouragement for the teacher and little or no inspiration for the pupil. Any teacher worthy the name can do more effectual work for each individual pupil in a school of twenty-five than in a school of five.

Now we are up against the weighty proposition of agreeing on some plan whereby we can have fewer schools with more pupils. We should have one high school in each township where all advanced pupils could be together and perhaps some older ones not so far advanced. This school so located as to best serve all the interests of the township. This high school should be in charge of a very competent teacher, one whose services would at the least be worth $70 per month.

If we are satisfied with present school property we could have five other teachers, three of whom we could pay $50, and two $40, with little or no increase of tax for teachers' fund.

The teacher of the high school could have teachers' meeting and thereby an interest in all the schools of the township, and should in many cases become a resident of the township with a home near the high school, taking interest in the social and intellectual advancement of the township. Our township high schools should aim to prepare the pupils to enter some of the higher institutions of learning, more especially our agricultural college.

With our high school interested in the advancement of the agricultural classes and working in harmony with our State Agricultural College, getting our boys and girls to feel, as they rightly should, that there is no field opens to them the opportunity for usefulness and the chance to establish themselves in comfortable homes with pleasant surroundings as does the rural districts.

It is high time we were getting away from the idea that there is naught else but drudgery on the farm.

It is time we were instilling into every country boy and girl the fact that here is a grand opportunity.

Fellow farmers, it is within our power to fill all of the rural districts of fair Iowa with pleasant and comfortable homes, wherein shall dwell a contented and happy people. And we can make no better start than to give every country boy and girl the chance for a high school education under the direction and advisement of competent teachers and at the same time have them surrounded with good home influences. Make an effort to keep them contented on the farm and check the already alarming tendency to flock into the towns and cities. It is high time we put forth more effort to make the industry, which ever has been, is today and ever must be, the basic foundation of our Nation's prosperity; the most inviting of all industries.

Taking agriculture in all its varied branches, where is there a better field for the boy or girl with high ambition to become influential and at the same time useful to the world? We should put forth every effort to help the more modest, or, as we sometimes say, the dull boy or girl to a clearer conception of what he or she really is. We should help them to a realization of their own possibilities.

In conclusion let us all realize with the poet:

> "God gives no value unto man
> Unmatched by need of labor,
> And cost of worth has even been
> The closest neighbor."

* * * * * *

> "Up the broad stairs that value rears
> Stands motive beck'ning earthward,
> To summon men to nobler spheres
> And lead them northward."

## LEGISLATION IN THE INTERESTS OF IOWA FARMERS.

*Hon. G. F. Coburn, Before the Cherokee County Farmers' Institute.*

Farmers in the past have borne the burdens of taxation and combinations with but little complaint; when I say farmers, I mean all who are interested in agriculture. We often remark that we will not accomplish anything if we try, but we observe also that whenever a leader arises, and a determined effort is put forth, results are attained.

I recall to mind, during the session of the Thirtieth General Assembly, when the Iowa Meat Growers' Association met at Des Moines and asked for a hearing before the committee on Railroads and Commerce, that the hearing was granted, the committee convened, and at the conclusion of the hearing of the meat growers' association and that of the managers of the railroad systems, the request of the meat growers' association was granted, and this was not overlooked by President Roosevelt in his message to Congress, when he clearly indicated that there must be something done along this line at the present session; and also, this organization ought to indorse the president's attitude. You may think this would be useless, but stop and think; this organization is the official voice of the farmers of Cherokee county of the State of Iowa, and the best State in the United States.

One thing more; there ought to be established at the State Prison at Anamosa a binding twine factory thereby furnishing employment for the inmates and a profit for the State, and at least a cheaper twine for the farmers of the State.

We had on June 30, 1904, 381 convicts. These convicts are employed in the stone quarries, getting out material for the completion of the prison. The work of constructing this prison was begun July 2, 1872, by hired labor and continued until May 13, 1873. Since the latter date the labor, both skilled, and unskilled, has been performed by convicts, as it was the policy of the State to build economically, and at a minimum cost, and at the same time to furnish employment for the inmates. This prison is nearly completed, and when done, it necessarily follows that other employment must be furnished. I will read now, from the Board of Control report, the report of the Warden of the State Prison of Minnesota, page 509.

> In the Minnesota State Prison, the employment of prisoners is divided between the "state account" and the "piece price" systems. About three hundred work on State account in manufacturing binding twine and other State work. The other two hundred and fifty are employed in the manufacture of boots and shoes under the piece price plan.
>
> The sales from the binder twine plant the past year have been about nine hundred and thirty thousand dollars. This industry has been profitable to the State for some years and at the same time it has been a great saving to the farmers of the State.
>
> The twine is sold direct to farmers at about two cents per pound below wholesale or manufacturing prices. None of the twine is shipped outside of the State. The State's net profit from the bindery twine industry the past year was over one hundred and twelve thousand dollars. We manufactured over ten million pounds of twine, the farmers of the State saved two hundred thousand dollars, gauged on wholesale prices. The actual saving however was much larger

## THE WOMAN'S CLUB—IS IT DESIRABLE, OR POSSIBLE?

*Mrs John Claus, Before the Cerro Gordo County Farmers' Institute.*

*Ladies and gentlmen of the Farmers' Institute*—I have been requested by the programme committee to describe the society we have in our neighborhood called, "The Farmers' Wives and Daughters' Society." We first started it about six years ago, the object being to create a more social spirit among the farmers' wives and daughters of the community. Hitherto we had been a very unsociable neighborhood, hardly knowing our nearest neighbors. This perhaps, was the reason we began to awake to the fact that something might be done to improve matters.

At first about ten farmers' wives met to talk over the possibilities of organizing such a society. We accordingly set to work, elected a president, vice-president, secretary and treasurer appointed a committee of three to make out a constitution, by-laws, etc. These were adopted at the next meeting.

It has taken some time to get our society in the thriving condition it is in today. The constitution had to be revised some and a few amendments added to meet all demands, but now we think it just about right.

Any farmer's wife or daughter of good reputation may become a member. To retain membership each member shall attend as often as once in three months, and entertain at least once a year, unless there be some reasonable excuse for not so doing.

We meet every alternate Wednesday at two o'clock P.M. in the summer and at eleven o'clock A.M. in the winter, the one entertaining furnishing the dinner or supper, whichever it may be, but must keep within the bill of fare provided by society. The small sum of five cents is collected from everyone at the table. Proceeds, after expenses are met, to go for charitable purposes.

Within the past two years the society increased so fast and began to extend so far that we found it necessary to limit the membership to thirty and also decide on a limited territory, hoping this might encourage others beyond to organize similar societies. Our meetings are all conducted in the same business order, beginning with a hymn, and ending with a programme. At each meeting a committee of three is appointed by the president to make out programme for ensuing meeting. Programmes consist of music, select readings, papers, discussions, etc. We have no trouble in making them interesting, as we aim to put each member on for whatever she is qualified. Some can tell us the best methods of canning fruit, making pickles, curing meats, etc. Others are experts at poultry raising, while still others can write fine papers on any subject pertaining to the home, care of children, early experiences, etc.

We had two picnics last summer, which were greatly enjoyed by both young and old. At holiday time we had an oyster dinner for members and their families. All these treats are free, society furnishing every thing. The men are invited to attend any time and a goodly number do attend in the winter when they can spare the time, and I believe they enjoy it as much as we women do.

We appropriated about fifteen dollars for charitable purposes during the last year, which is good considering the amount paid in.

Lastly—Why do we like the society? I answer—There is nothing that so breaks the monotony of farm life, and drives dull care away as a good social time with our neighbors.

The programmes give us something to think about aside from the daily routine of work, and the help we get exchanging ideas and methods better equips us for the work we have before us.

# PART VII.

# THE IOWA STATE FAIR, ITS EARLY HISTORY AND PRESS REPORTS OF THE FAIRS OF 1854 AND 1904.

## EVOLUTION OF THE STATE FAIR.

*Breeders' Gazette.*

Time is an essential element in the creation and the attainment of ideals. Rarely does an ideal spring full-fledged from the brain of man. Whether of the material or immaterial, whether of matter or morals, study and experience are apt to enlarge or alter ideals that are conceived of the brain of man and gain expression in his handiwork. The law of evolution find exemplification in all the avenues of life. Ever the effort is forward, upward. Betterment is eagerly sought, progress is unceasingly pursued. The times change and if we do not change with them the primal law of improvement is broken.

Time works changes as to the viewpoint of things. Many a creation has been called into being for a supposed specific purpose only to find development into a fairly new character, into lines so broadened as to be almost different from those originally in contemplation. This is the evolution of ideals. The student of things agricultural sees capital illustration of this fact in its application to the State fair. The country fair was in its original conception and establishment a place or an occasion for the marketing of products and wares. Education inheres in comparison and attrition. The side-by-side comparison of products arouses pride, stimulates effort at improvement. The brushing against people, the touching of elbows with the world, is the most impressive, the most effective education for the human mind. Although fairs are of almost prehistoric age the evolution of the educational idea has been surprisingly slow. As a matter of fact resolved into its ultimate analysis the modern State fair or agricultural exhibition has as its fundamental principle the education of the people. It matters not that many people to this day fail of appreciation of this fact. Many an exhibitor views the fair merely as a market place, or as a means of winning a little prize money. Hundreds of fair goers see only a frolic in the event. These people being blind see not; but thinking men, men who keep their eyes and the avenues to their brains open, understand that education of the farm folk is the underlying idea of the agricultural fair. All else is incidental, of more or less importance, but not relevant to the present discussion.

The broad modern view, the only one tenable under present conditions, the one that is absolutely rock-rooted in fact, is that the state fair is as much an educational factor for the farmer as is the agricultural college. Discussion can properly proceed on no other basis. It has long passed the bounds of controversy, if indeed controversy ever found a peg on which to hang in the discussion of the subject. As an educational force the State fair is as properly the subject of State aid as any other educational factor which deals with the enlightenment of farm folk. This point is conceded; it is established beyond all cavil by the magnificent financial support extended by various States, but no man of depth of information and breadth of reasoning faculties can fail to give hearty assent when once his attention is directed to an examination of the subject.

A number of essentials inhere in the successful State fair—and by the word successful we mean a fair which not merely makes money but rises to a high realization of its object and discharges well its obligations. Location comes first. It should be located at a point which is most convenient to the largest number of people whose interests it serves. Second, it should be located at some center of population on which reliance may be placed for gate receipts and which can afford ample accommodations for all visitors. This location should be a railroad center, and the more extensive its ramifications of these arteries of travel the better. Easy access to the fair is a prime essential.

The home of the State fair should be ample in extent but not so large as to occasion too wide distribution of its exhibits. Grounds may be too large, exhibits too scattered. Muscle must bring brain in touch with these educational exhibits, and there is a limit to human endurance. It is easy to make this mistake. It finds its greatest exemplification at the St. Louis World's Fair. The chief weakness in this most magnificent of all creations of its character is the tremendous spread of its exhibits. Twelve hundred acres have been included in its borders and the waste spaces are appalling to human energy when the task of sight-seeing is attempted. Two extremes must be avoided—too great expansion, too great condensation. Cramped quarters are as bad as scattered exhibits.

The greatest mistake made in the equipment of the State fair grounds of this country has been the temporary character of the construction, the building for today instead of tomorrow. The fair itself is short-lived—six days and it fades aways into history. Mistaken ideas of economy have led men to provide temporary ephemeral inadequate unsafe quarters for this brief-termed exhibition, and their ideas have contemplated little of the future. They have not considered possible expansion nor durability. Cheapness has characterized their construction, and already on some of the grounds which a decade ago were considered the best equipped this mistake stands out conspiciously and rehabilitation of equipment is necessitated. Fair managers should build for the future. Presumptious, indeed, is he who ventures to set bounds to the agricultural development of this country. The State fair is founded on the permanency of agriculture as a pursuit. Any idea that fails of understanding that fact will prove distressing in the present, costly in the end. Permanence of construction should characterize every structure erected on a State fair ground.

Adequacy of equipment is another essential. Exhibits are greatly limited by cramped and ill-suited quarters. This applies generally to all departments of the fair, but especially to live stock. Barns must be substantial and convenient and afford protection from storms. The time has gone when valuable stock should be risked in inadequate fair ground stables. Not only must exhibits be considered but the comfort and convenience of the people must be conserved. The horrowing experience of the past ten years of State fair management proves that ample provision must be made against rain, that arch enemy of outdoor exhibitions. The growing uncertainties of the weather have cost untold thousands of dollars to fair managers. The lesson has been set; it is folly to overlook it. Permanent exhibition buildings, covered walks between them, and covered arenas for the showing of live stock are among the essentials of a State fair ground if equal battle is to be offered the elements. Given the assurance of protection from rain in the examination of exhibits and in passage from one building to another and the country people will brave storm and rain to study at the State fairs. The need of permanent protection for the live stock department was never better illustrated than at Hamline in 1904. It was a wet week and broke a long run of luck that the Minnesota State Fair has enjoyed. The seivelike canvas under which shows and sales were conducted afforded comparatively small protection to the hundreds who sought its shelter and emphasized again the necessity of building to outwit the freaks and vagaries of the weather. In brief, a dollar spent in temporary construction on a State fair ground is money thrown away. It is a violation of the fundamentals of economical expenditure.

Another essential to the ideal State fair is ample transportation facilities, not only to and from the grounds, but to the city of its location. Physical discomfort is more or less inherent in a visit to such an exposition. That fair will command the most liberal attendance which succeeds best in reducing these physical discomforts to a minimum. Railroads are the chief offenders in this respect. Corporations have no souls, and railroads at fair time have no bowels of mercy. Human beings must either subject themselves to the crushing that the law protects animals from or else forego a visit to the fair. The remedy is difficult to find, but should be persistently searched for, nevertheless. With transportation to and from the grounds fair managers are more or less connected, and no problem should receive more careful consideration. Crowds will be augmented in proportion to the diminution of the present discomforts of transportation to State fairs.

The dissemination of news concerning the results of the competitions is necessary to the exercise of the greatest influence of such institutions. Awards in live stock and other competitive departments of the fair should be officially drawn off the books each day and put in form for publication, and forwarded to every daily paper in the State and to papers at every county seat. The cost of such service is inconsequential compared to the benefits derived. In the nature of the case the direct benefits of such a fair can be realized by only a small percentage of people of the State, and it is incumbent on the management of such a State educational institution that its lessons be wide spread through the press. It can be handily and readily accomplished.

The subject is not exhausted even in this somewhat extended treatment. Material progress has been made in fair ground equipment and fair conduct the past ten years, but room yet remains for betterment.

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# HISTORY AND PROCEEDINGS OF THE FIRST FAIR OF THE IOWA STATE AGRICULTURAL SOCIETY

### Held at Fairfield, October 25, 1854.

*Compiled by B. S. M'Elhinney, Under Direction of J. M. Shaffer, Secretary.*

[From report of the Iowa State Agricultural Society for the year 1874.]

## PROCEEDINGS.

At the meeting of the Board of Directors of the Jefferson county Agricultural Society, held October 13, 1853, it was, on motion of C. W. Slagle,

*Resolved*, That the officers of the society be instructed to take immediate steps to effect the organization of a State Agricultural Society, and that the officers use their influence to have said society hold its first annual exhibition at Fairfield, in October, 1854.

The following persons at that time constituted said officers: P. L. Huyett, president; Caleb Baldwin, vice-president; J. M. Shaffer, secretary.

C. Negus, Joseph Fell, John Andrews, Jacob Ramey, Wm. S. Lynch and James Beatty.

The above committee reported at the regular meeting of the Board of Directors held November 26, 1853.

The following circular letter will embody their report. This was made up by a sub-committee consisting of P. L. Huyett, C. Baldwin and J. M. Shaffer:

''The undersigned, appointed a committee of the Jefferson County Agricultural Society, to confer with the different Agricultural Societies in the State of Iowa for the purpose of organizing a State Agricultural Society, respectfully invite your society to be represented by delegates—nine in number—to meet at Fairfield, Jefferson county, on December 28, 1853, to confer with delegates from other county societies.

You are earnestly solicited to be present, that the immediate organization of a State society may be completed, and that the time and place of holding our first State Fair may be determined upon. Associations not notified through their officers are also invited to be represented. Papers throughout the State favorable to the organization of such an association will please copy the above notice.''

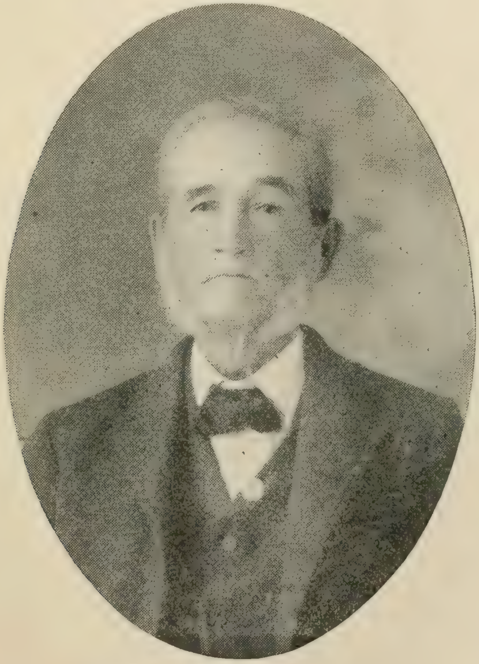
P. L. Huyett,
C. Baldwin,
J. M. Shaffer,
Committee.

FAIRFIELD, IOWA, November 21, 1853.

"We beg leave to call the attention of the people of the State to the foregoing call from the officers of the Jefferson County Agricultural Society.

"'There is no free State in the Union save Iowa, in which there is not a State Agricultural Society, organized and in successful operation, and they have been recently organized in most of the Southern States. They have been productive of a vast amount of good and no one can estimate their usefulness.

''Is it not time for the farmers of Iowa to be aroused to the importance of such an organization in this State? Shall we be laggards in the race of improvement? Shall the resources of other States be developed, their wealth increased and their people elevated in the scale of intellectual being, and ours stand still?



**Isaac T. Gibson, Salem, Iowa.**

Visitor at the First Iowa State Fair (1854).

''Farmers are not the only persons interested in this subject. Every citizen of the State had a deep interest in her prosperity and reputation. Let no one suppose that it is for others to act and for him to remain a quiet and uninterested spectator.

''We hope to see a large delegation of citizens of every county in the State—farmers, mechanics, merchants and professsional men at Fairfield on the 28th of December, 1853. Come up, gentlemen, and do your duty to yourselves and to the State.

''We congratulate the Jefferson County Society upon their prompt action in this behalf. They have done themselves credit in taking hold of the matter in so earnest a manner. The state society will, dobtless, have to struggle through many difficulties; but it will succeed, and the time will assuredly come when its projectors will be regarded as public benefactors.''

A copy of the above circular was written to each county agricultural society in the State, as far as the committee could obtain information of their organization. The circular was also published in many papers of the State, and the remarks of the editors and the correspondence of the committee awakened pretty general interest in the success of the enterprise. However, the day of the proposed convention having arrived, but five counties were represented, viz.: Henry, Van Buren, Wapello, Jefferson and Lee.

A. R. Fulton, editor of the Fairfield *Ledger*, of December 22, 1853, says:

''We notice that several of our State exchanges have responded to the call for a meeting here on the 28th inst., for the purpose of organizing a State Agricultural Society. For the information of the *Sentinel*, we would say that we did not intentionally omit to call attention to the proposition for holding the above meeting, the official call for which was published in our paper several weeks ago. We feel, with our neighbor, like taking a deep interest in this matter, and should like to see the meeting well attended from every part of the State. The adaption of Iowa for becoming a great agricultural State, demands that early steps be taken to enlist that interest in the subject and secure those advantages which experience in other states had shown to be the result of such organization. All the free states except Iowa, and several of the southern states have state societies fully organized and in successful operation. Shall it be said of Iowa, whose agricultural resources are unsurpassed, remains in the background in this respect? We hope the meeting on Wednesday next will determine to give a negative answer to this question.

''There is no better method of exciting an honorable emulation between this and other States, and between the different sections of this State, than by the workings of such a society. Let every county society in the State be represented in the meeting, and all who attend from abroad may rest assured that the friends of the cause in Jefferson county will meet them on fair ground. The State society may be in full operation for the holding of a fair some time next autumn which will do honor to Iowa.''

The following is a copy of the proceedings of the convention:

## IOWA STATE AGRICULTURAL CONVENTION.

Pursuant to a call, a number of delegates met at the court house in Fairfield for the purpose of forming a State Agricultural Society.

On motion, D. P. Inskeep, of Wapello, was called to the chair, and D. Sheward, of Jefferson, appointed secretary.

On motion, the credentials of delegates were called for and presented and five counties, Henry, Jefferson, Lee, Van Buren and Wapello, reported as represented.

On motion, J. M. Shaffer was called upon and read communications, to wit: One from Scott county, one from Muscatine county, and one from Hon. James W. Grimes, of Des Moines county.

On motion, a committee of one person, from each society represented, was appointed to draft a constitution and by-laws suitable for the organization of a State Agricultural Society, and to report the same to this convention. The chair appointed the following gentlemen said committee:

Thomas Sivetor, Henry county; D. L. Huyett, Jefferson county; Josiah Hinkle, Lee county; Timothy Day, Van Buren county; J. W. Frazier, Henry county. J. M. Shaffer, secretary for said committee.

On motion, convention adjourned until 2 o'clock, P. M.

**O. D. Leonard, Boyden, Iowa.**
Visitor at the First Iowa State Fair (1854).

### AFTERNOON SESSION.

Wednesday, two o'clock P.M.

Convention met pursuant to adjournment.

D. P. Inskeep in the chair.

The committee on constitution and by-laws reported the following, which on motion was unanimously adopted:

## CONSTITUTION.

NAME. The style of this society shall be "The Iowa State Agricultural Society." Its object shall be the promotion of Agriculture, Horticulture, Manufactures, Mechanics and Household Arts.

SECTION 1. The society shall consist of such citizens of the State as shall signify by writing or otherwise, their wishes to become members, and shall pay upon subscribing, not less than *one dollar*, and one dollar annually thereafter; which fee shall be paid on or before the first day of June. Also of honorary and corresponding members.

SEC. 2. The officers shall consist of a president, vice-president, and three directors, from each county society, who, together shall constitute a board of control for the general management of the business of the society.

SEC. 3. The recording secretary shall keep the minutes of the society. The corresponding secretary shall carry on the correspondence with other societies, with individuals and with general committees, in the furtherance of the objects of the society.

SEC. 4. The treasurer shall keep the funds of the society and shall disburse them on the order of the president, or the board of control, countersigned by the recording secretary, and shall make report of their receipts and expenditures at the annual meeting. He shall give bond in the penal sum of three thousand dollars ($3,000) for the faithful performance of his duties, and the payment of all moneys in his hands.

SEC. 5. The board of control shall take charge of, and distribute and preserve all seeds, books, plants, medals, etc., which may be transmitted to the society, and shall also have the charge of all communication designed or calculated for publication; and so far as they may deem expedient, may collect, arrange and publish the same, in such a manner as they may deem best calculated to promote the object of this society.

SEC. 6. The managers are charged with the interests of the society in counties in which they shall respectively reside, and will constitute a medium of communication between the board of control and the remote members of the society.

SEC. 7. There shall be a meeting of the society at the place for the fair on the 25th day of October, 1854, and at such time thereafter as the board of control may direct, at which time all the officers of the society shall be elected by a majority of the members present by ballot. Extra meetings may be convened by a call of the president at one months' notice. Nine members shall constitute a quorum for the transation of business.

SEC. 8. The constitution may be amended by a vote of two-thirds of the members attending any annual meeting of the society, after two months' notice of such amendment being given through the public papers of the State.

## BY-LAWS.

ARTICLE 1. The president shall preside at all meetings of the board of control of the society. He shall deliver all premiums and diplomas for articles exhibited at the fairs of the society, to persons entitled thereto, and when the same are to be paid in money, he shall draw orders therefor on the treasurer. He shall also perform all other duties usually pertaining to such office.

ART. 2. The vice-president shall in case of death, sickness, absence, or resignation of the president, perform all the duties of the president till the next annual election.

ART. 3. All members of the society who have paid their annual fee, shall be admitted free to all exhibitions of the society, and the board of control shall each year fix the prices of admission to the exhibition of all persons not members.

ART. 4. Competitors for crops shall state in writing the character of the ground, the time and method of preparing it, the time of planting or sowing, the mode of cultivation, the kind of seed, the time of reaping or gathering it, with the number of bushels to the acre; which must be certified to by at least two disinterested persons, or be duly authenticated by oath of the competitor himself; and no crop shall come into competition unless these regulations be complied with.

ART. 5. No animal or article on exhibition, which has taken two premiums at previous fairs of the society, in the same class, will be allowed to be entered.

ART. 6. Members neglecting to pay their annual fee until the day of exhibition will be charged twenty-five cents in addition to it.

The committee suggest that Fairfield, Jefferson county, is the most suitable place for holding the First Annual Fair in 1854.

On motion, the committee then proceeded to the election of officers, which resulted as follows:

*President*—Thomas W. Clagett, Lee county.
*Vice-President*—D. P. Inskeep, Wapello county.
*Recording Secretary*—J. M. Shaffer, Jefferson county
*Corresponding Secretary*—C. W. Slagle, Jefferson county.
*Treasurer*—W. B Chamberlain, Des Moines county.

MANAGERS.

Lee county—Arthur Bridgman, R. Brackett, J. Hinkle,
Van Buren county—Timothy Day, Dr. Elbert, Wm. Campbell.
Henry county—Thomas Siveter, A. Lapham, J. W. Frazier.
Jefferson county—P. L. Huyett, John Andrews, B. B. Tuttle.
Wapello county—Richard Warden, Gen. Ramsey, Uriah Briggs.
Mahaska county—Wm. McKinley, Sr., John White, M. T. Williams.
Polk county—Dr. Brooks, Thos. Mitchell, Wm. McKay.
Des Moines county—J. F. Tallant, A. K. Avery. G. Nerly.
Louisa county—Geo Key, Francis Springer, T. Marshall.
Muscatine county—J. H. Wallace, James Weed, John A. Parvin.
Dubuque county—W. Y. Lovill, V. McCraney, L. Langworthy.
Johnson county—R. H. Sylvester, Le Grand Byington, C. Saunders.
Scott county—J. A. Burchard, J. Thorington, L. Summers.

Mr. Seward then offered the following:

*Resolved*, That a committee of five be appointed to memoralize the General Assembly of the State of Iowa, praying for the passage of a bill rendering pecuniary aid to the furtherance of a permanent establishment of a State Agricultural Society in this State.

The chair named the following gentlemen: George W. McCleary, Iowa City; George S. Hampton, Iowa City; David Rorer, Burlington; Ralph P. Lowe, Lee county; George Gillaspy, Wapello county.

On motion,

*Resolved*, That the First Annual Fair of the State Agricultural Society be held at Fairfield, Wednesday, 25th of October, 1854.

On motion,

*Resolved*, That the papers of Fairfield, the *Iowa Farmer and Horticulturist*, and the papers throughout the State, be requested to publish the proceedings of this convention.

A paper being prepared, the undersigned agreed to become members of the Iowa State Agricultural Society:

Charles Negus,
J. M. Shaffer,
D. P. Inskeep,
Aaron Lapham,
J. W. Frazier,
Josiah Hinkle,
J. T. Gibson,
Stephen Frazier,
Evan Marshall,
Thomas Siveter,
John Andrews,
B. B. Tuttle,
Eli Williams,
B. L. Huyett.

On motion adjourned sine die.

D. P. Inskeep, Chairman.

D. Sheward, Secretary.
Fairfield, December 28, 1853.

## ADDRESS.

Early in February, following the meeting of the above convention, the president caused to be published the following address to the farmers of Iowa:

"*Gentlemen*—At a convention of the farmers from different counties of the State held at Fairfield, Jefferson county, Iowa, on the 28th of December last, a State Agriculture Society was organized, and the undersigned elected president for the present year. As many of you farmers, like myself, were not present at the convention, by virtue of the office conferred upon me, I address you this circular for the purpose of informing you of the permanent organization of the society, and also with the hope of enlisting your cordial co-operation with the officers elected, in placing this society upon such a basis as shall not only effect the great object for which it was originated, but shall also be an honor to our young State. For many years past, annual State agricultural fairs have been held in almost every State in the Union, where farmers and mechanics of the *whole State* are in the habit of bringing together the products of their skill and industry in amicable rivalry.

"Nowhere in the Union does the farmer enjoy greater natural advantages than in Iowa; notwithstanding we too often see a want of the application of science and well regulated labor to the development of this most important interest of the State. Experience has proven that the best and surest mode of bringing agriculture to a high state of perfection, is by stimulating emulation among the farmers, by annual fairs, and the awarding of premiums to meritorious exertion.

"This is the object for which this society was organized, and we now call upon every farmer of the State, and *every other citizen*, to take an interest in this society and lend their aid toward its advancement. Here we can all stand on a common platform, no matter what political opinions may divide us. This is common ground upon which every patriot and every lover of his State can stand engaged in the laudable purpose of advancing the important agricultural and manufacturing interests of the State—the true source of national wealth and prosperity.

"Shall this society then languish for want of the cordial support of our citizens, especially of those whose interests it was especially designed to serve? No. Farmers, this must not happen! I hope you take too much pride in your profession to suffer so great a *disgrace to fall upon you*.

"But how are we to command the means of paying the necessary premiums and the incidental expenses of the fair? The legislature will, no doubt, at its next session, patronize the State Society, but this year we must rely alone upon private contributions.

"The first section of the constitution of the society is as follows:

> The society shall consist of such citizens of the State as shall signify by writing or otherwise, their wish to become members, and shall pay on subscribing, not less than one dollar, and not less than one dollar annually thereafter, which fee shall be paid on or before the first day of June. Also honorary and corresponding members.

''You will here perceive that all persons who desire to become members of the society, must signify their intention and pay a fee of one dollar on or before the first day of June next.

''By these small sums from each member, it is expected to raise an amount sufficient to meet the demands of the society, together with such sums as may be donated by those who are willing to give a larger fee to aid the society in its infancy; and it is hoped that many will be found in the State to come forward and give in this way. As inducement for others to come forward, I now propose to give fifty dollars in aid of the first fair, to be expended in the following manner: Twenty-five dollars for the best five acres of Indian corn raised in the State; fifteen dollars for the second best, and ten dollars for the third best; all competitors to give a detailed account of the mode of cultivation and quantity of products, as well as the measurement of the land, accompanied with the sworn certificate of at least two respectable citizens, not members of the family of the competitors. These premiums to be awarded under the management of the society.

''With a view of accomplishing this important object (the raising of funds), I respectfully recommend that all the officers of the society take immediate steps to have subscription papers circulated in their respective counties, at as early a day as possible, calling on every citizen to become a member. This labor can be divided by the officers appointing others to assist them in each county. I can not too earnestly urge upon the officers of the society, and all others who feel an interest in its success, the importance of industry in its behalf. The funds, when collected, can be sent to the treasurer, Mr. W. B. Chamberlain, in Des Moines county. At least that officer should be informed of the amounts that may be relied on, by the first day of June next, when the officers of the society will meet at Fairfield for the purpose of consulting upon the premiums to be awarded, and making arrangements for holding the fair on the 25th of October next.

''Farmers! It is not only your duty to become members of the State society, but you should by all means attend the fair, and bring with you something for exhibition.

"As I have not the pleasure of an acquaintance with the officers elected, and was not at the convention, I have not the means of knowing their respective postoffices (the same not having been published among the proceedings), they will therefore confer a favor upon me by addressing me upon the subject, making any suggestions that may seem to them advisable, for the interest of the society.''

Respectfully your fellow citizen,
T. W. CLAGGETT,
President State Agricultural Society.

The foregoing address was published early in the month of February, 1854. On the 10th day of April following, the secretary caused to be published the following card:

*To the Officers of the Iowa State Agricultural Society:*

The time for decided action has fully come. The address of T. W. Claggett, president of the society, has been largely circulated, and we presume generally read. And seconding his efforts and desire to establish the State society on a firm basis, we urge all the officers of the society to meet in Fairfield on Tuesday, June 6th, to arrange a list of premiums, and to attend to the other business of the society. We hope that all the officers, managers and other members of the society will be present.

We further desire that all persons friendly to the objects of the society, farmers, producers, mechanics, artisans, etc., will write the secretary at Fairfield (postpaid), and make suggestions in regard to articles to which premiums should be awarded, in order that the list may be as complete as possible; for it is not expected that the board of itself should know all the articles that may be produced or manufactured in the State, and which may come in for competition.

We further desire that the subscription papers, as suggested by Mr. Claggett, be put into immediate circulation in the several counties, and that all papers in the State, favorable to the cause of agriculture, publish this circular.

J. M. Shaffer,
Recording Secretary.

Fairfield, Iowa, April 10th, 1854.

We copy the following, written for the *Iowa Farmer and Horticulturist*:

Iowa State Agricultural Society,
Keokuk, Iowa, June 14, 1854.

"*Editors of the Iowa Farmer*—The officers of the State Agricultural Society who met at Fairfield, on the 6th of June, for the purpose of making out a list of premiums to be distributed at the State Fair, very much regretted your absence from the meeting, which, we learned was occasioned by unavoidable circumstances.

"With the view of making known to the farmers of the State our proceedings at that meeting, as well as our prospects in the future, I propose through the medium of our State Agricultural paper, *The Farmer*, to give a detailed statement, hoping that all the friends of agriculture in the State will direct their attention to aiding the officers of the Society in carrying forward this great enterprise to a triumphant conclusion. This may readily be done if we can but enlist the hearty co-operation of our farmer friends.

"'At the meeting on the 6th of June we made out, for publication, a list of such articles of the production of the State, as we thought most conducive to a fulfillment of the intention of the organization, and offered a large list of premiums to be awarded to meritorious articles exhibited at the State Fair, to be held at Fairfield, commencing on the 25th day of October next and continuing three days.

"'The list of premiums will be seen by reference to the report of the secretary, and amounts to over twelve hundred dollars. This large amount of money must be realized by small contributions (membership fees of one dollar each).

''We shall not receive any aid from the State this year, as no provision has been made for the State society. The prospects, however, of realizing sufficient funds from membership fees are flattering from the reports of friends in different parts of the State. Yet, I can not too earnestly press upon the attention of friends of the State society, and all farmers in the State, the importance of earnest and constant exertion in this particular. Let every farmer in the State, and friend of agriculture who desires to see this great interest advance, consider himself as specially interested in this matter; leave not to others what is your duty to do yourselves. Let each man (and woman too) strive to secure a large list of subscribers, and, when the fair takes place, be in attendance to give countenance and support to the society by their presence, and with articles for exhibition. In this way you will show that you are interested in the good work. We have most encouraging information from most of the counties in the State. A large amount of stock and manufacturing and agricultural productions will be on the ground for exhibition which can not fail to please and reward all visitors. But, in order to increase its usefulness and pleasure, we should not be satisfied to attend alone, but let every one of us endeavor to have something on the ground for exhibition; we should not be satisfied with enjoying the sight of others' skill and industry, but contribute something ourselves to the general mass, which will afford a two-fold pleasure.

''It is too often the case we hear visitors at fairs say, if I had known that such and such a thing could have taken a prize, I could have brought a better article. A false pride prevents many persons from exhibiting, while their more praiseworthy neighbors, with worse articles, but more energy, carry off the prize. Let this not be the case at our State Fair. Bring something, the best you have, and compare it with other articles of the same kind. In this way you will see the defects in your own, and it will stimulate you to make more exertion in the future. For my own part, I have always thought the farmer who brought to the fair a poor article, the best he had, with a view of encouraging the fair, showed more true and laudable enterprise than his neighbor who, with perhaps more money and better opportunities, showed a better article.

''Come, then, friends, to the fair, with your wives and daughters, and bring with each of you something for exhibition. Do not fear that some one will have a beter article than yourself and that you will not obtain the prize, when it is not the money you want, but that you are actuated by the purer motive to encourage the great enterprise, and make our beautiful young State what nature has intended her to be, the garden spot of America.

''I have the assurance of our friends in Fairfield that the most ample and generous provisions will be made for the accommodation of all who attend the State Fair. The officers of the society are exerting themselves to obtain the services of some distinguished stranger who will deliver an address upon the subject of agriculture before the society; and I have the pleasure of informing you that we have hope of obtaining the services of one of the most distinguished men in America (of whom due notice will hereafter be given).

''Remember, friends, this is but the beginning of a great and worthy enterprise, which should enlist both the hearts and purses of every friend of agricultural progress in the State. Remember, too, we have this to rely alone on, membership fees to pay the premiums and the necessary expenses of holding the fair. Let each of us work to get members (one dollar is all that is required to constitute a membership), and entitles the member to exhibit any article in either or all of the published classes.

''To those who receive the papers containing the list of premiums, I most earnestly invite your co-operation in extending the information in your neighborhoods, by showing it to those who do not take the papers, and urging them to become members of the State society. Do not rest satisfied alone with being members of the county societies. Your county societies you should encourage by all means, but not to the neglect of the State society, for it is at the latter alone where the intelligent enterprise of the whole State can come in competition and honorable rivalry.

''I hope the officers of all the county societies in the State will take an interest in bringing before their respective communities the objects and prospects of the State society, and endeavor to elicit their interest in its behalf. All the officers in the county societies are authorized to receive subscriptions to the State society, and transmit the same to the treasurer, Doctor Chamberlain of Des Moines county (at Burlington), or to Doctor Shaffer, at Fairfield, who will return receipts for the same.

''In conclusion, friends, I must say to you, that the officers of the State society are determined that no effort on their part shall be wanting to make our Fair on the 25th of October, 1854, an honor to the State; and we most earnestly call upon each, and all of you, to co-operate with us in this new and most laudable enterprise.

''Respectfully yours,

''THOMAS W. CLAGGETT,
''President of the State Agricultural Society.''

# REPORT OF STATE AGRICULTURAL FAIR, HELD AT FAIRFIELD, IOWA, OCTOBER, 1854.

In preparing our report of the *First Agricultural Fair* ever held in Iowa, we have thought proper to prefix a few historical facts relative to the origin, progress and organization of the society. We do this, hoping it will be of interest, not only to the present membership, but to those also who in after years may compose the society. We furnish its history with the greater satisfaction, because from the most unfavorable and cheerless prospect at its commencement, the fair exceeded the most sanguine wishes of all its friends.

The first decisive steps were taken by the Jefferson County Agricultural Society. At their annual meeting, held, October 13, 1853, on motion of C. W. Slagle, Esq., it was

*Resolved*, That the officers of the society be instructed to make immediate efforts to effect the organization of a State Agricultural Society.

In accordance with Mr. Slagle's resolution, P. L. Huyett, C. Baldwin and J. M. Shaffer addressed a letter to the officers of each county agricultural society in the State, as far as could be ascertained, and to numerous private individuals, inviting each society to be represented by nine delegates, to meet in a general convention at Fairfield on Wednesday, December 28, 1853. The committee also issued printed circulars, inviting a full representation from societies not personally addressed, and calling upon the papers of the State to give notice of the proposed convention. The press, with its usual liberality, called attention again and again to the matter; the circulars of the committee were copied by many of the papers of the State, and the enterprise commended and labored for with great zeal and spirit, and to the efforts of the press we are mainly indebted for the truly brilliant display at the First State Fair.

The proposed convention met at Fairfield on the day specified. Ample arrangements had been made for the reception and accommodation of a large number of delegates.

The convention was organized by calling D. R. Inskeep, of Wapello county, to the chair, and appointing D. Sheward, of Jefferson, secretary. Several communications were then read; one from James W. Grimes, who urged upon us to adopt a constitution and elect a board of officers, if not more than two persons were present.

Although the meeting did not number more than fifteen persons, we acted upon the suggestion of Mr. Grimes, and the following named gentlemen—a member from each society represented—reported our present constitution and by-laws, viz: Thomas Siveter, P. L. Huyett, Josiah Hinkle, T. Day and J. W. Frazier.

It was mainly drawn up from the constitution of the Illinois State society, and though abounding in imperfections, yet it was as good an instrument as could have been expected, considering the hastiness of its preparation.

After the adoption of the constitution, the committee elected the following board of officers:

Thomas W. Claggett, of Lee county, president; D. P. Inskeep, of Wapello county, vice-president; J. M. Shaffer, of Jefferson county, recording secretary; C. W. Slagle, of Jefferson county, corresponding secretary; W. B. Chamberlain, Des Moines county, treasurer; besides, three persons in each county known to have an agricultural society.

This done, a resolution was adopted appointing a committee of five, to memorialize the general assembly of the State, praying for the passage of a bill rendering pecuniary aid to the furtherance of a permanent establishment of a State Agricultural Society in this State.

After the adjournment of the convention, nine gentlemen subscribed their names to the constitution, and these constituted the entire membership.

Early in the spring of 1854 the secretary addressed a circular to every part of the State, calling upon persons to write him advising as to what articles should come into competition and asking aid in the preparation of a list of premiums, and inviting the entire board of control to meet at Fairfield on June 6, 1854. Very few letters were received in reply to our circular, and when the board convened June 6th they had but very imperfect data for forming a list of premiums, at once comprehensive, suitable, and coming within reach of our possible funds.

But, taking the list offered by the State Society of Pennsylvania, we offered a tolerable large list; one numbering above four hundred items and amounting to $1,100. This was considered sufficiently comprehensive in view of the fact that the board had no assurance that a single dollar would be collected aside from their individual exertions to raise membership fees. Having no assistance from the State, the society a mere experiment, finding no interest awakened in the agricultural portion of our citizens, possessing no assurance that the officers in the several counties were active, not even knowing whether or not they had received intelligence of their election, the prospect seemed dark and uninviting. But, conscious of the importance of such an organization in our State, feeling that our humble efforts to promote the cause of agriculture, manufactures and domestic economy would be appreciated, we did not hesitate to assume the responsibility of promising a brilliant entertainment at the first State Fair.

Soon after the adoption of the list of premiums, Thos. W. Claggett, the president, caused to be published a circular, or address, setting forth the claims of the society upon the attention of every person in the State. And it gives us pleasure to add that his solicitations were not unheeded, nor did his promises fail to be accomplished. Too much can not be said of the untiring energy and laborious attention of Mr. Claggett to secure the permanent organization of the society at this period. Now the labors of C. Baldwin, B. B. Tuttle and J. M. Shaffer, as a committee, to procure and arrange grounds suitable for the exhibition commenced. Without a dollar in the treasury, without the assurance of assistance, with the very doubtful credit of the society, they prepared a place for the fair, as ample, convenient and comfortable as could have been expected. If any feel disposed to find fault with their preparations, they should bear in mind that the whole expense was a matter of personal responsibility.

Such a brief sketch of the primitive origin of the society, and with all these embarassments, with these unfavorable auspices, with such discouraging coldness and indifference, we looked forward to the Fair Day—the final test of our labors—with fear and alternate hope.

For some weeks previous, in common with many other parts of the United States, this region suffered severe drouth; a scarcity of water was anticipated, but on Saturday before the fair we had a very copious rain which filled up the wells and furnished an abundant supply of water. The weather during the whole exhibition was most delightful; everyone, even the disappointed competitors, appeared cheerful; good feeling and harmony prevailed; no profanity shocked the sensibility of those present, sobriety, decorum and good order marked the entire assembly.

The board of officers met on the evening of October 24th, Thos. W. Claggett, president, in the chair. In the absence of the treasurer, J. M. Shaffer was appointed to act in his place. The board then adopted certain regulations for the exhibition of stock, decided on the prices of admission to the fair grounds, appointed committees and arranged the regular programme of the fair. During the whole of Tuesday, persons continued to arrive and a large amount of stock was entered for exhibition. On Wednesday the fair was regularly commenced, stock was entered and numbered, and early in the day the various committees commenced their examination.

In filling up our report of the premiums that were awarded, we shall commence with class number one, and, as far as possible, will follow the numerical order through the catalogue.

The first and second classes consisted of thoroughbred cattle of different ages. There were in all fifty-five entries, and the display was said to be highly creditable both to the exhibitors and to our State. Durham cattle outnumbered all other kinds of fine stock.

The committee was composed of Martin P. Sharts, of Lee county; Jacob Ream, of Van Buren county, and W. H. Postlewait, of Des Moines county, who awarded the premiums to the following persons:

Timothy Day, Van Buren county, best bull over three years, ten dollars.

Jeffrey Johnson, Des Moines county, second best bull over three years, five dollars

John Glenn, Jefferson county, third best bull over three years, three dollars.

Timothy Day, Van Buren county, best bull between two and three years, eight dollars.

W. H. Probasco, Henry county, second best bull between two and three years, five dollars.

W. H H. Rice, Mahaska county, third best bull between two and three years, three dollars.

John H. Day, Van Buren county, best bull between one and two years, five dollars.

J. D. Israel, Van Buren county, second best bull between one and two years, three dollars.

D. P. Inskeep, Wapello county, third best bull between one and two years, two dollars.

H. G. and J. Stewart, Lee county, best bull calf under ten months, three dollars.

E. P. Heigler, Washington county, second best bull calf under ten months, two dollars.

E. S. Gage, Jefferson county, third best bull calf under ten months, one dollar.

H. G. and J. Stuart, Lee county, best cow over three years, ten dollars.

H. G. and J. Stuart, Lee county, second best cow over three years, five dollars.

A. B. Person, Wapello county, third best cow over three years, three dollars.

H. G. and J. Stuart, Lee county, best heifer between one and two years, four dollars.

A. B. Person, Wapello, county, second best heifer between one and two years, three dollars.

Timothy Day, Van Buren county, third best heifer between one and two years, two dollars.

Timothy Day, Van Buren county, best heifer calf under ten months, two dollars.

A. B. Person, Wapello county, second best heifer calf under ten months, one dollar.

D. P. Inskeep, Wapello county, third best heifer calf under ten months, one dollar.

Classes 3, 4 and 5 contained natives and grades, and work oxen. The following gentlemen composed the committee: Jonas Houghton, Van Buren county, Judge Jeffries, Wapello contny, and J. F. Paull, Des Moines county.

The display in this department fell far short of what might have been expected. The whole number of entries in all classes amounted to only fourteen, but what was lacking in quantity was made up in quality, the stock exhibit being of superior merit. The committee awarded the following premiums:

P. L. Huyett, Jefferson county, best bull between two and three years, six dollars.

Moses Dudley, Jefferson county, best bull between one and two years, four dollars.

J. R. Parsons, Jefferson county, best cow over three years, eight dollars.

R. W. Griffith, Washington county, best team work oxen, ten dollars.

P. L. Huyett, Jefferson county, second best team work oxen, eight dollars.

C. C. Clemens, Washington county, best yoke work oxen, four dollars.

S. Pancrast, Jefferson county, second best yoke work oxen, two dollars, and J. R. Parsons, Jefferson county, best heifer calf, two dollars.

Classes No. 6 and 7, embracing beef cattle and milch cows, were examined by Messrs. Wells Andrews, Henry county, Uriah Briggs, Wapello county, and Thos. C. Ireland, Jefferson county, who awarded the following:

Timothy Day, Van Buren county, best beef, ten dollars.

Wm. E. Day, Van Buren county, second best beef, five dollars.

Moses Dudley, Jefferson county, third best beef, three dollars.

W. H. H. Rice, Mahaska county, best milch cow, ten dollars.

Classes Nos. 8 and 9 comprised heavy draft stallions, aged three years, two years, and colts; also mares of the same grades, including those with foal at foot. There were about thirty entries; the competition was active, and the stock was said to be of a very creditable character. The awarding committee consisted of David Switzer, Jefferson county, Manning Mills, Washington county, and James Stuart, Lee county, who decided as follows:

R. Leaverton, Van Buren county, best four year heavy draft stallion, ten dollars.

E. A. Rider, Pottawattamie county, second best four year heavy draft stallion, eight dollars.

Joseph Fell, Jefferson county, third best four year heavy draft stallion, three dollars.

Wm. Pitkin, Jefferson county, best brood mare and colt, ten dollars.

Samuel Scott, Van Buren county, best stallion, all work, ten dollars.

F. H. Frazier, Henry county, second best stallion, all work, eight dollars.

Wm. C. Wolf, Lee county, third best stallion, all work, three dollars.

W. S. Lynch, Jefferson county, best brood mare and colt, ten dollars.

Davis Bush, Jefferson county, second best brood mare and colt, eigh dollars.

Lewis Bonnet, Van Buren county, third best brood mare and colt, three dollars.

Classes No. 10, 11 and 13 embraced other horses than heavy draft, matched horses, geldings and mares for harness, and also the list of thoroughbred horses and mares. Here the display far exceeded that of any one department of the stock exhibition.

The aggregate number of entries amounted to eighty-eight, and the number of animals shown in this class was not less than one hundred.

In thoroughbreds there were sixteen animals exhibited, thus evincing a commendable spirit on the part of our farmers to improve the blood of the most noble animal. Among so many and such fine horses, the committee found some difficulty in coming to a just decision. They express a regret that the time allotted to them was so short. It was unfortunate that the labor of examining one hundred horses should have been imposed on one committee, and but a few hours allowed them for their duty. Particularly was this the case in respect to thoroughbreds. The report adds: that it was impossible to make their return as full and explicit, in regard to pedigree, as could have been desired by the Society. The committee, however, were active, and no complaint has reached us of any injustice in their decision.

The following gentlemen composed the awarding committee: Wm. Timberman, Lee county; John Jones, Mahaska county; and Daniel Rider, Jefferson county, who reported as follows:

Jacob Dillion, Washington, best stallion, three years old and under four, eight dollars.

Samuel Scott, Van Buren, second best stallion, three years old and under four., five dollars.

Wm. Lunnon, Van Buren, best stallion, two years old and under three, eight dollars.

Daniel Almond, Wapello, second best stallion, two years old and under three, five dollars.

—— Cook, Jefferson, best stallion, one year old and under two, five dollars.

Wm. Pitkin, Jefferson, second best stallion one year old and under two, three dollars.

Wm. Braden, Washington, best three year old mare, eight dollars.

John Graber, Jefferson, second best mare three years old, five dollars.

B. Sutton, Marion, best mare, two years old and under three, eight dollars.

G. W. Honn, Jefferson, second best mare, two years old and under three, five dollars.

Lewis Bonnett, Van Buren, best one year old colt, five dollars.

David Bush, Jefferson, second best one year old mare, two dollars.

M. P. Sharts, Lee, best matched carriage horses, five dollars.

A. B. Porter, Henry, best matched farm horses, five dollars.

J. C. Ware, Jefferson, best saddle gelding, five dollars.

Dodge & Harris, Scott, best harness gelding, five dollars.

The following are the premiums on thoroughbreds:

Wm. H. Rowland, Jefferson, best thoroughbred stallion, fifteen dollars.

C. T. Lamson, Jackson, second best thoroughbred stallion, ten dollars.

O. N. Kellogg, Decatur, best thoroughbred mare, fifteen dollars.

B. Sutton, Marion, second best thoroughbred mare, ten dollars.

Class No. 12 was composed of jacks, jennets, mules, etc. There were above thirty entry tickets issued. The stock on exhibition was a fair representation of this class of animals in Iowa. It is supposed that we, as a State can not compete with Missouri or Kentucky in mules. An extensive dealer writes that there is not a first rate jack in Iowa! Farmers should consider this fact, and improve upon it. It should be noticed that the first premium span of mules came from Missouri.

The committee of decision consisted of J. A. Goodrich, ——— county, James E. Miller, Van Buren county, and R. Crain, of Jones county, who awarded the following:

Thomas Mitchell, Polk county, best jack over three years old, ten dollars.

J. Stockton, Henry, second best jack over three years old, five dollars.

W. H. H. Rice, Mahaska, best jennett, ten dollars.

H. B. Mitchell, Jefferson, second best jennett, five dollars.

Geo. W. Pater, Lewis county, Missouri, best span of mules on exhibition, diploma.

Barton S. McCoy, Keokuk, best span of mules, ten dollars.

James W. Peck, Wapello, second best span of mules, five dollars.

Martin Dickson, Wapello, best two year old mule, five dollars.

Jacob Webb, Jefferson, second best two year old mule, three dollars.

Jacob Dillion, Washington, best one year old mule, three dollars.

W. H. H. Rice, Mahaska, best sucking mule colt, three dollars.

The above committee make a supplementary report as follows: They recommend that a diploma be awarded to J. W. Frazier, of Henry county, for a yearling mule, adding that said mule was the finest on exhibition, but was not in the enclosure at the time the premiums in class No. 12 were awarded.

Class No. 14 was made up of sheep. Those on exhibition were mostly imported from other States and were of superior quality. There were twenty entries, with perhaps double that number of animals. The committee consisted of J. F. Gilky, Michigan, A. J. Houghton, Van Buren, and C. T. Lamson, of Jackson, who awarded the following:

John Andrews, Jefferson, best buck, ten dollars.

John Andrews, Jefferson, best pair ewes, ten dollars.

Andrews & Co., Jefferson, second best pair of ewes, five dollars.

The above were on *long wool sheep*.

The following were the premiums awarded on *fine wooled sheep*:

Tri. M. Finch, Jefferson, best buck, ten dollars.

Henry Morgan, Washington, second best buck, five dollars.

P. C. Perkins, Loraine, Ohio, best pen of ewes, diploma.

Henry Morgan, Washington, second best pen of ewes, five dollars.

This committee speaks in terms of highest commendation of fine Saxony sheep, on exhibition by P. C. Perkins, of Loraine county, Ohio, and by W. H. Probasco, Henry county; but no premiums were offered by the society in this class.

Class No. 15 was occupied by swine of all classes. There were eleven entries, and the board regret that the display was so meagre in point of numbers. It is to be regretted that the farmers who have choice breeds, or fine native animals, do not exhibit a stronger disposition to bring them to our fairs for examination and comparison. One difficulty is found in the trouble of moving them, and the injury to the animals themselves; but the greater importance of improvement in swine should outweigh all minor considerations. The raising of swine is a source of immense revenue to the farmers of Iowa, and no effort should be neglected to produce fine stock of this kind. The awarding committee were Jeffries Johnson, Des Moines county, Wm. B. Arnold, Van Buren county, and Willet Dorland, Henry county. They decided as follows:

Wm. Jones, Lee county, best boar one year old, ten dollars,

J. Jones, Henry county, best boar, six months old and under one year, ten dollars.

Joseph Dole, Jefferson county, best brood sow, over two years old, ten dollars.

John Andrews, Jefferson county, best sow, six months and under one year, ten dollars.

J. Jones, Henry county, second best sow, six months and under one year five dollars.

T. C. Tullis, Lee county, best litter of pigs, ten dollars.

Joseph Dole, Jefferson county, second best litter of pigs, five dollars.

Timothy Day, Van Buren county, best and largest fat hog, five dollars.

Class No. 16 included poultry. The number of entry tickets amounted to nearly thirty. The display was a very creditable one, and gave evidence that we are not behind other states in the importation and breeding of choice qualities of fowls. The coops of Shanghai and Malay, Black Spanish, Cochin China, etc., were a most attractive feature of the exhibition.

The fowls gave evidence of a most commendable interest in this department of domestic agriculture. The awarding committee was composed of James W. Grimes, Des Moines county, R. P. Lowe, Lee county, and E. Meachem, of Jefferson county, who decided as follows:

P. D. Edwards, Lee county, best Shanghai, three dollars.

Jno. W. Dubois, Jefferson county, second best Shanghai, two dollars.

Jno. W. Dubois, Jefferson county, best Dorking, three dollars.

David C. Williams, Lee county, best Poland, three dollars.

Ab. Morrison, Jefferson county, second best Poland, two dollars.

P. D. Edwards, Lee county, best collection Cochin China, Malay and Chittigong, three dollars.

Geo. Acheson, Jefferson county, second best collection of Cochin China, Malay and Chittigong, two dollars.

Jno. W. Dubois, Jefferson county, best Dunghill fowls, three dollars.

G. W. Holland, Lee county, best collection of fowls, five dollars.

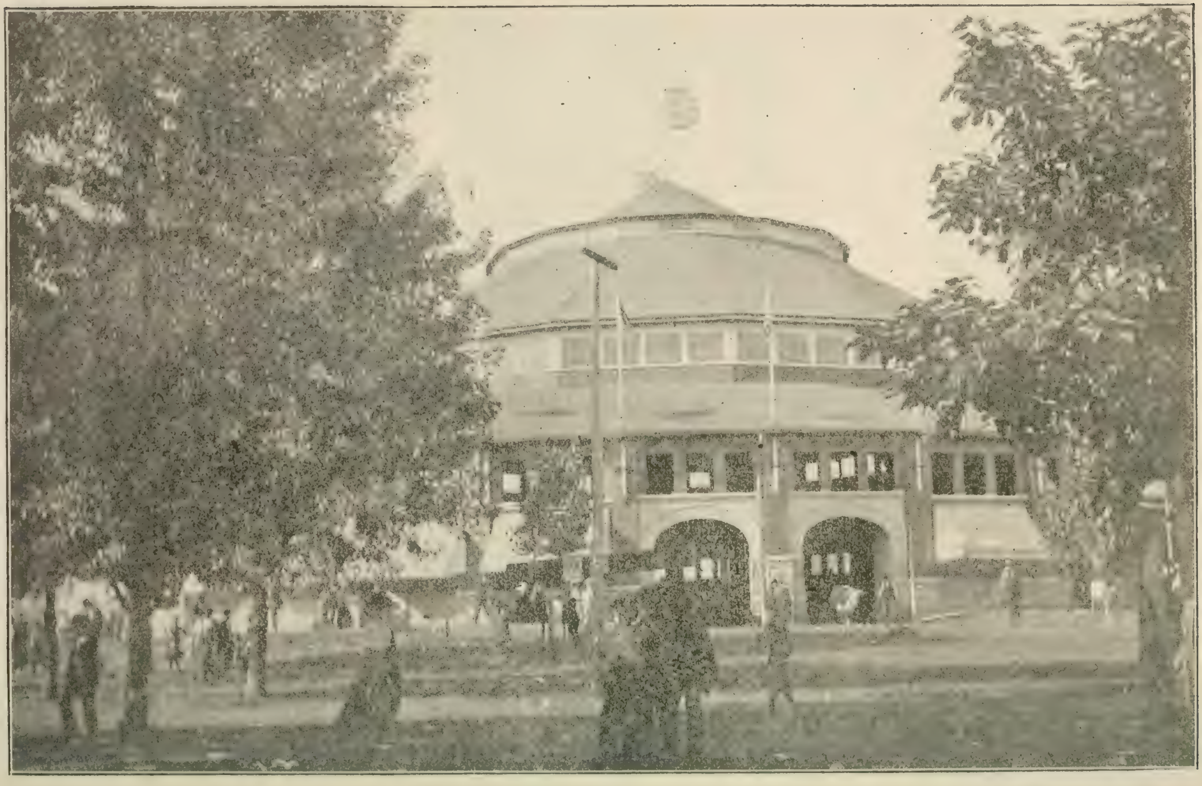
P. L. Huyett, Jefferson county, best geese, three dollars.

P. L. Huyett, Jefferson county, best turkeys, three dollars.

Mrs. P. L. Huyett, Jefferson county, best Nursery ducks, three dollars.

E. A. Harbour, Jefferson county, best Muscovy ducks, three dollars.

Classes No. 17, 18 and 19 were devoted to all kinds of farm implements, farm machinery, inventions or improvements useful in the prosecution of all



View of Live Stock Pavilion on Iowa State Fair Grounds, showing entrance to ring.

branches of farming economy; also articles suitable for the various departments of house and farm.

Many meritorious articles were presented which we would be glad to notice if space were allowed us in this report. There were in these several classes above fifty entries, making a display of very great interest. The committee consisted of the following gentlemen: Thos. H. Benton, Johnson county, E. Andrews, Henry county, Wm. Stoker, of Ohio, S. H. Devol, of Wapello county, David Mowry, Jefferson county, and M. Singler, of Van Buren county.

In addition to the above the board, at a regular meeting, appointed the following committee to examine and report on foreign manufactured articles, viz: Paul C. Jeffries, ———, Erastus Haskins, ———, and Timothy Day, of Van Buren county. The report of these gentlemen will be embodied in the report, on the classes above mentioned.

No. 1. Diploma to Wm. Heflin, of Illinois. No description of his patent corn planter has been left with us It was much commended by all for the simplicity of its construction, the adaption of the several parts to the end proposed, and for its comparative cheapness.

No. 2. Diploma to A. B. Munn, of Keokuk county, for Randall & Jones' improved seed planter (Sprague's patent). It is a hand planter which costs but ten dollars, and with it one man can easily plant ten acres per day as it drops and covers in a very exact and uniform manner. The whole machine, with corn enough to plant an acre, weighing but ten pounds.

Diploma to S. P. Booth, of new York, for a model fanning mill. The exhibitor placed in the hopper, gravel wheat, beans, timothy seed, nut shells, etc., and so admirable is the construction and arrangement of the sieves, passages, etc., that the timothy seed was all deposited by itself in its proper receptacle; the larger bodies fell into a separate box, and the wheat by once passing though was found to be entirely freed from every particle of the admixture.

No. 4. B. B. Tuttle, Jefferson, best fanning mill, five dollars.

No. 5. Newton & Stevens, Lee, best farm wagon, ten dollars.

No. 6. Henry Wheeler, Van Buren, second best farm wagon, five dollars.

No. 7. Chamberlain & Coutes, Lee, best buggies, diploma and five dollars; honorable mention.

Nos. 8 and 9. Diploma and book to Elijah Dollarhide, of Fairfield, Iowa, for the best model farm and yard gates. We regret that we have no description of this article. It is said to be admirably suited to the end proposed.

No. 10 Obel Stanwood, Van Buren, best ox yoke, one dollar.

No. 11. Diploma and book to John McNelley, of Keokuk county, for an improved bee palace. It claims superiority from its simplicity, cheapness; for a contrivance which prevents the moth from reaching the comb; for the facility with which a swarm may be put in it, the honey extracted, etc. It was very much admired by everyone who examined it.

No. 12. To W. C. Garretson, from J. G. Garretson, Imperial loom, Henry county, diploma and two dollars.

No. 13. Geo. Griggsby, Lee county, best grain cradle, one dollar.

No. 14. Geo. Griggsby, Lee county, best collection of agricultural implements This consisted of hoes, rakes, forks, sythes, snaths, etc., all of superior material and workmanship. They were manufactured at the State Penitentiary, of which institution Mr. Griggsby is warden. They were highly praised by the committee and all who examined them. The committee awarded for them a premium of five dollars.

No. 15. Rea & Gray, Jefferson, best reaper and mower, ten dollars.

No. 16. Adam Steever, Jefferson, best threshing machine, ten dollars.

No. 17. Green & Gardner, Scott county, a premium of five dollars for the best pump for wells. The principle seems similar to the chain pump; the links are much longer; instead of rings this pump has gum elastic balls, which work admirably. It is said to be very durable; it requires but very little effort to raise the column of water in the tube.

No. 18. E. L. Evans, Easton, Pa., patent india rubber washing machine, diploma. This was much admired by all. We regret that we have no description of it, its price, or the place where it may be obtained. It is understood that a manufactory of these machines will soon be established in Iowa.

No. 19. To Lyon & Lewis, Van Buren county, a book and diploma for a machine for grading and ditching. A lengthy description has been furnished, but our space will not allow its insertion here. This machine is cheap and simple in its construction, durable if well made and well used; efficient in its operation and not liable to get out of order. They are not yet in the market, but will be as soon as the proper arrangements can be made. Any information in regard to machines and rights can be obtained by addressing Lyon & Lewis, Farmington, Iowa.

No. 20. A diploma to J. R. Moffit & Co., for their patent grain separator, a thresher and cleaner of admirable contrivance and usefulness. These machines are manufactured at Piqua, Ohio.

No. 21. A diploma to J. R. Copelin, of Lee county, for corn and cob crusher and grinder, manufactured at St. Louis, by Scott & Co. This machine, in its operation, excited much attention, and being put in operation by a single horse, appears to be worthy the consideration of farmers and others interested.

No. 22. Diploma to A. R. Gaines, Jefferson county, for Atkins' self-raker and reaper, manufactured in Chicago, by J. S. Wright. Honorable mention is made of it by the committee. The display of its practical workings, after the exhibition, was looked upon with much interest.

No. 23. Diploma to Scranton & Sherwood, of Davenport, Iowa, for buggy and harness, manufactured at New Haven, Conn., by G. & D. Cook & Co.

No. 24. Diploma to M. S. Arnold, of Massachusetts, for Amos Lyon's pattern copper lightning rod.

No. 25. Diploma to E. C. Carson, for churn, manufactured at Chillicothe, Ohio.

No. 26. Diploma to John Bean & Co., for fanning mill, manufactured at Hudson, Mich.

Departing from the general plan of our report in regard to time, we will insert the report on flowers, and the plowing match, which took place on Friday afternoon.

It was overlooked in the published list of premiums, to offer a premium for the best plow; but Mr. Claggett gave notice that a special award would be made. The committee was composed of John Andrews, of Jefferson county, H. Sunderlin, of Wapello county, and Thomas Mitchell, of Polk county.

Some fine plows were on exhibition by W. W. Skinner of Davenport, also by Benjamin Skinner of Eddyville, but they were taken from the ground before the committee commenced their examination. They awarded to Harvey Ray, Jr., a premium of $5.00, and add that his plows are the best *for all work* on exhibition. They also awarded a diploma to Roderick Owen for his breaking plow, manufactured at Tiskilwa, Ill., and say that "it is the best breaking plow that has ever come under our observation."

The several committees closed their examination up to class 20 on the first day.

Thursday, October 26th, commenced the second day of the fair.

The riding match which was to have been decided today, was by particular request of the board, continued until Friday, A. M. The equestrianism of this day was witnessed and admired by at least 10,000 persons. A full report will be seen below.

In proper numerical order we again commence with class No. 20. This class included leather and its manufacture. The display was very meagre, not one half so good as it should have been; only seven entries were made, not a tithe of what many of our county societies exhibit every year. The committee consisted of John W. Hayes, Jefferson, Joseph Fell and C. Brewington, who awarded the following:

James M. Slagle, Jefferson county, best farm harness, two dollars.

John McGreer, Lee county, second best farm harness, one dollar.

M. P. Sharts, Lee county, best carriage harness, three dollars.

W. S. Lynch, Jefferson county, best harness leather, one dollar.

W. S. Lynch, Jefferson county, best side leather, one dollar.

J. Throckmorton, Jefferson county, pair boots (gents), one dollar.

Class No. 21 contained butter, cheese and honey. Here could be seen a mammoth cheese, presented to Hon. James W. Grimes by certain citizens of Lee county, fine rolls of golden butter—some twenty different lots—gave ample evidence that our country is well adapted to the varied products of the dairy. Most of the samples were from Jefferson, but we also had choice lots from Lee, Henry, Washington and Des Moines counties. The awarding committee were, Robert McElhinny, Jefferson, Dr. Brooks, Polk, and A. H. Pickering of Henry counties, who decided as follows:

Mrs. L. F. Boeretler, Jefferson county, best butter, two dollars.

Mrs. John Townsley, Jefferson county, second best butter, one dollar.

M. Meachem, Washington county, best cheese, three dollars.

B. Robinson, Washington county, best honey, two dollars.

Class No. 22. The committee consisted of Jonas Houghton, M. Meachem, Washington county and W. M. Reed, Jefferson county.

The following premiums were awarded:

P. L. Huyett, Jefferson county, best corn meal, one dollar.

Mrs. Geo. Achison, Jefferson county, best bread (homemade), one dollar.

Class No. 23 comprised grains, seeds, etc. About forty distinct entries were made; these made a display highly creditable to our State. Nearly all parts of the State were represented, with fine specimens of grain, and many articles were deemed worthy of a premium, but they did not meet the regulations of the published list.

The awarding committee, H. G. Stuart, of Lee county; Uriah Briggs, of Wapello county; and John Whitacre, of Jefferson county, decided as follows:

Adam Steever, Jefferson county, best spring white wheat, one dollar.

Adam Steever, Jefferson county, best spring red wheat, one dollar.

W. Dorland, Henry county, best Mediterranean tea wheat, one dollar

Jos. Drake, Van Buren county, best Egyptian oats, one dollar.

L T. Gillett, Jefferson county, best Irish potatoes, one dollar.

J. L. Scott, Jefferson county, best sweet potatoes, one dollar.

John Snook, Jefferson county, best timothy seed, one dollar.

Class No. 24 consisted of vegetables. The display was good for the season. A fine collection was on exhibition by Moses Dudley, of Jefferson county.

The committee, Amos Townsend, Willet Dorland and W. P. Brazelton, of Henry county, decided as follows:

Moses Dudley, Jefferson county, best six heads of cabbage, one dollar.

David Switzer, Jefferson county, best sweet pumpkins, one dollar.

Class No. 25 was occupied by domestic manufacturers. Here was a most brillant feature of the exhibition. The display spoke volumes to the honor of the mothers, wives and daughters of our State. Such an array of blankets, flannels, carpeting, coverlets, etc., could scarcely be excelled. A great many works of great merit were presented, and the Board can only express their regret that the funds were not sufficient to give some substantial reward to the exhibitors.

The deciding committee were E. Manning, J. E. Ingersoll and Mrs. Charles C. Nourse, who awarded as follows:

D. P. Edwards, Lee county, best pair white woolen blankets, three dollars.

Mrs. J. Drake, Van Buren county, best plaid flannel, one dollar.

Mrs. J. Drake, Van Buren county, best white flannel, one dollar.

Mrs. D. McLean, Jefferson county, best mixed full cloth, three dollars.

J. M. Canfield, Van Buren county, best mixed woolen yarn, one dollar.

Mrs. P. L. Huyett, Jefferson county, best fringed mittens, one dollar.

Mrs. L. F. Boeretler, Jefferson county, best fine white hose, one dollar.

Josiah Hinkle, Lee county, best mixed cotton hose, one dollar.

Lewis Pitman, Lee county, best cotton and wool carpet, two dollars.

Mrs. G. W. Sinclair, Jefferson county, best rag carpet, two dollars.

W. F. Campbell, Jefferson county, best double coverlet, two dollars.

Josiah Hinkle, Lee county, best homemade shirt, one dollar.

Daniel Van Winkle, Jefferson county, barred linen, two dollars.

Class No. 26 was in part a continuation of the above, including besides ornamental needle work and fancy articles of this description. Too much can not be said of the industry and skill of those ladies who presented samples for examination in this class. At the same time that the exhibition gave evidence of very superior workmanship in this class, it proved a source of much interest and pleasure to the thousands of visitors who were present.

A very large number of entry tickets were issued, each one often including several specimens. Several articles were reported to the board not coming within the description of the published list. They make particular mention of a lady's dress wrought in the highest style of artistic elegance and perfection, the work of Miss Carrie Grubb, of Farmington, Iowa. They also make honorable mention of the great variety, number and beauty of the quilts on exhibition. The committee consisted of D. Worthington, Henry county, Mrs. Henry Trimble, Davis county, and Miss E. C. Dorland, Henry county, who labored with great zeal and energy to examine, compare and decide upon the long list of articles offered for their inspection. They awarded as follows:

Mrs. Flemington, Davis county, best variety worsted work, two dollars.

Mrs. Hathaway, Davis county, best table cover, one dollar.

Mrs. H. C. Clinton, Van Buren county, best wax work, one dollar.

Mrs. H. C. Clinton, Van Buren county, best ornamental shell work, two dollars.

Mrs. L. R. Reeves, Lee county, best child's embroidered coat, one dollar.

Miss Carrie Grubb, Van Buren county, best lady's wrought dress, three dollars.

Miss S. L. Boeretler, Jefferson county, best work for chair, one dollar.

Miss Woodward, Jefferson county, best lamp stand, one dollar.

Miss S. L. Boeretler, Jefferson county, best ottoman cover, one dollar.

Miss F. Elliott, Washington county, best glass basket, one dollar,

Miss S. L. Boeretler, Jefferson county, best nine pieces ornamental needle work, two dollars.

Miss S. L. Boeretler, Jefferson county, best pin cushion, one dollar.

J. R. Parsons, Jefferson county, best counterpane, one dollar.

Susan Campbell, Van Buren county, best quilt, two dollars.

Nancy Nixon, Van Buren county, second best quilt, one dollar.

Mrs. Ann Eckert, Jefferson county, best needle and work case, one dollar.

Miss Wheeler, Jefferson county, best plain needle work, one dollar.

Mrs. Hathaway, Davis county, best silk embroidery, one dollar.

In Class No. 27 there was quite a display of preserves, pickles, cakes, etc. The committee were Wm. J. Corcorow, Lee county, Mrs. Dr. Henry, Jefferson county, and Miss Hannah Morris, Van Buren county, who awarded as follows:

Mrs. C. Baldwin, Jefferson county, best pound cake, one dollar.

Mrs. E. Andrews, Henry county, best sponge cake, one dollar.

Mrs. L. F. Boeretler, Jefferson county, best tomato preserves, one dollar.

Mrs. L. F. Boeretler, Jefferson county, best preserves, one dollar.

Mrs. E. Andrews, Henry county, best tomato figs, one dollar.

Mrs. P. L. Huyett, Jefferson county, best specimen pickles, one dollar.

Mrs. L. F. Boeretler, Jefferson county, best apple butter, one dollar.

Mrs. L. F. Boeretler, Jefferson county, best peach butter, one dollar.

Mrs. Charles Cox, Jefferson county, best homemade soap, one dollar.

Mrs. L. F. Boeretler, Jefferson county, best Jelly, one dollar.

In class No. 28 with other articles a premium of two dollars was awarded to Wm. F. McCrary, Van Buren county, for school desk and chairs, con-

Judging Corn. Boys in competition for Iowa State College Scholarship, Fair of 1904.

sisting of a swinging desk attached to the chair in such a manner as to form a very easy seat for reading or writing, opening out in front when used for writing, and folding back on the right forming an arm to the chair, also containing a convenient deposit for books, stationery, etc.

Class No. 29 embraced field crops. The deciding committee consisted of Josiah Hinkle, Lee county, John Andrews, Jefferson county, and Thomas Mitchell, Polk county. They awarded the following, according to the affidavits of the respective competitors:

Hezekiah Fagan, Polk county, best five acres of corn, society's premium, ten dollars.

Hezekiah Fagan, Polk county, best five acres of corn, special premium by Thos. W. Claggett, president of the society, twenty-five dollars.

D. P. Inskeep, Wapello county, second and third best five acres of corn, special premium by Thos. W. Claggett, twenty-five dollars.

Alex. Fulton, Jefferson county, best fall wheat, five dollars.

H. G. & J. Stuart, Lee county, best spring wheat, five dollars.

Hezekiah Fagan showed that he raised 139½ bushels of shelled corn to the acre; the whole five acres measured 697½ bushels; it weighed 151 bushels and 53 pounds to the acre; the whole five acres weighed 759 bushels and 41 pounds. D. P. Inskeep shows 136 bushels to the acre. Alex. Fulton shows 26 bushels of fall wheat to the acre. H. G. & J. Stuart show 33 bushels of spring wheat to the acre.

Class No. 30 was occupied by fruits. The display was quite meagre in respect to quantity; this is owing rather to the late frost and the subsequent drought than to any lack of interest and industry on the part of our farmers. The samples presented were of the choicest varieties. The committee were M. P. Sharts, Lee county; D. P. Inskeep, Wapello county; and B. C. Andrews, Henry county. They awarded the following:

J. W. Frazier, Henry county, best variety of apples, three dollars.

R. E. Moyer, Jefferson county, second best variety of apples, two dollars.

J. W. Frazier, Henry county, best bushel of apples, one dollar.

Jno. Snook, Jefferson county, best grapes, one dollar.

J. F. Hunt, Lee county, best watermelon, one dollar.

D. Switzer, Jefferson county, best watermelon (by the board), one dollar.

Class No. 31. Committee, Daniel Rider, John Courtwright and A. S. Ballard, awarded a premium of two dollars to James M. Slagle, of Jefferson county, for the best grate.

Also, to Harvey Ray, Jr., of Des Moines county, a premium of two dollars, for some beautiful specimens of sculptured marble. These were much admired, and were judged to be executed in the highest style of the art.

Class No. 32. Hams cured by the exhibitor, and cooked; also requiring statement as to manner of curing. Committee, W. S. Lynch, Jefferson county, S. B. Turner and O. Stannard, of Van Buren county, who awarded the following:

P. L. Huyett, Jefferson county, best ham, five dollars.

J. F. Hunt, second best ham, three dollars.

L. F. Boeretler, Jefferson county, third best ham, two dollars.

Class No. 33. The committee consisted of Wm. Timberman, Lee county, Chas. C. Van, Polk county, and J. B. Paull, who awarded as follows:

C. D. McCaughey, Jefferson county, best monochromatic, one dollar.

C. Ingersoll, Mahaska county, best printing, two dollars.

Miss Jane Funk, Jefferson county, best floral painting, one dollar.

J. P. McKenny, Dubuque county, best daguerreotypes, diploma and two dollars.

Lewis Pitman, Lee county, best variety garden flowers, two dollars.

W. E. Moore, Polk county, best collection stuffed birds, diploma.

W. Marion, Jefferson county, best pair elk, diploma.

J. M. Shaffer, Jefferson county, best collection snakes, diploma.

Wm. Parr, Jefferson county, best paper hanging, diploma.

E. J. Toof, Lee county, dentistry, two dollars.

A. S. Ballard, Henry county, improved roofing, two dollars.

I. N. Pearce, Lee county, bookbinding, diploma and one dollar.

John Gowy, Washington county, best fur hat, one dollar.

A. Craig, Van Buren county, best samples bakery, diploma.

C. St. John, Van Buren county, best tin and copperware, diploma and one dollar.

Samuel Gault, Ohio, best paint brushes, diploma.

Mr. Toof presented a new style of artificial teeth, with continuous gums both inside and out, and an improvement connected therewith for restoring the natural contour of the face.

Mr. Ballard says of his improvement for roofing houses: "Take bricks eight inches square by one and one-half inches thick; bed these on the sheeting with sand, first using on the edge good cement or mortar, then either paint with waterproof paint or coat with pitch. This roof will not cost as much as shingles and will last at least two hundred years."

Many articles were exhibited in this and the discretionary class, which we would be glad to notice if space permitted.

Adding to the interest and profit of Thursday's entertainment was the address delivered by George C. Dixon, of Keokuk, at 10 o'clock A.M., to a vast and very attentive audience. We are happy to lay it before our readers in this report and will be found accompanying it.

The business of the day having been harmoniously conducted, at 7 P. M., the board of control met. On motion it was

*Resolved*, That a committee be appointed to wait upon Mr. Dixon and request a copy of his address for publication, Hon. Thos. W. Claggett to constitute said committee, and that the same be published in pamphlet form in connection with the proceedings and premiums of the fair, the list of officers for the next year, and the time and place of holding the next fair; that the number of copies be 1,500 with power to increase that number if Mr. Claggett thinks proper.

On motion, the committee on arrangements was authorized to sell all property belonging to the society and pay the money into the general treasury, and that this be an order on the treasurer to pay all debts against the society.

On motion, the secretary was instructed to buy a book for recording the minutes of the society and the business of the board.

Friday Morning.

A very large concourse had collected early to participate in the election and to witness the decision of the equestrian prize. At 9 A. M. the society met on the fair grounds, Thos. W. Claggett, president, in the chair. After being called to order, on motion, the thanks of the society were returned to Messrs. Henn, Williams & Co., for the use of the ground on which the fair was held.

The committee appointed to nominate officers, etc., reported through Doctor Elbert, their chairman. The following report was received and the several persons nominated were duly elected.

It was resolved that the next State fair commence on the second Wednesday in October, 1855, to be held at Fairfield.

### OFFICERS.

The following are the officers elect:

*President*—Thomas W. Claggett, Keokuk, Lee country.
*Vice-President*—D. P. Inskeep, Ottumwa, Wapello county.
*Recording Secretary*—J. M. Shaffer, Fairfield, Jefferson county.
*Corresponding Secretary*—P. L. Huyett, Harmony, Jefferson county.
*Treasurer*—C. Baldwin, Fairfield, Jefferson county.

### BOARD OF DIRECTORS.

Lee county—Wm. Timberman, Josiah Hinkle, Enos Andrews.
Wapello county—J. C. Mitchell, Hezekiah Cramer, R. H. Warden.
Jefferson county—P. L. Huyett, John Andrews, H. B. Mitchell.
Des Moines county—Henry Avery, Moses Robinson, J. Comstock.
Muscatine county—James Weed, J. H. Wallace, T. S. Parvin.
Henry county—R. L. B. Clark, John W. Frazier, Eliezer Andrews.
Davis county—Wm. B. Evans, E. M. Nelsons, H. W. Briggs.
Polk county—Thomas Mitchell, Dr. T. K. Brooks, Judge McKay.
Van Buren county—Timothy Day, William Campbell, Dr. J. S. Elbert.
Louisa county—Louis Kingsley, Samuel Townsley, Alf. Limbocker.
Monroe county—William Kinston, David Wills, David Snodgrass.
Washington county—A. P. Cooper, Jonathan Wilson, Albert Allen.
Clayton county—H. S. Granger.
Johnson county—James H. Gower, Le Grand Byington, Dr. Jesse Bowen.

A number of vacancies occured which might have been supplied had the several counties represented reported names at the stand.

After the election the riding match for the prize was renewed. The following is a list of the competitors for the prize, as they occur on the secretary's book:

No. 1. Miss Eliza Jane Hodges, Johnson county.
No. 2. Miss Emma Porter, Henry county.
No. 3. Mrs. Louisa Parks, Lee county.
No. 4. Mrs. Green, Lee county.
No. 5. Mrs. Ann Eckert, Jefferson county.
No. 6. Miss Kate B. Pope, Henry county.
No. 7. Miss Belle Turner, Lee county.

Subsequently, Miss Marie Minton, of Van Buren county, and Misses H. and Cynthia Ball, of Jefferson, competed for the prize.

The order of riding was as follows: A lady to ride once around the circle with a cavalier at her side, the second time the cavalier to ride around at some distance from the ring, then the lady four times around. Each lady was known by a ribbon of particular color. During the exercise the most perfect order was preserved by the entire assembly The ladies acquitted themselves most honorably. After each lady had completed the exercise, all were called in front of the stand. General Morgan, chairman of the committee, then addressed them in the following language:

*Ladies*—It affords me pleasure to express to you assurances of the unqualified admiration of the committee, and of the entire association, for the elegant and triumphant manner in which you have each and all acquitted yourselves on this occasion. Your performances, while novel in character, have been eminently gratifying to the thousands whose good fortune it has been to witness them, performances which we shall all remember, as among the most pleasing reminiscences of the past, and to which you may ever recur with feeings of just pride. You have, by your courage and skill, added a new and brilliant wreath to the brow of beauty which already adorns our State, and at the same time won for yourselves a most honorable distinction and a most enviable applause. Where there is so much to challenge admiration it is, of course, difficult to decide. The committee, in the delicate duty assigned them, feel the full force of this embarrassment. You have had your trial, ladies; ours is about to commence. Congratulating you once more on the beauty and excellence of your achievements, we beg you to be assured that we shall seek through the utmost impartiality to arrive at a proper judgment.

The whole troop then rode slowly around the circle during the decision of the committee. All were again brought to the stand and the prize awarded to Miss Belle Turner, of Lee county. Colonel Claggett, with his usual liberality, then presented each lady with a gold ring. This done the society convened at the stand. The list of premiums was then read, and the premium money paid out. Thus ended our first State fair, and a glorious fair it was, alike gratifying to all who witnessed it.

Some may be disposed to complain at the delay with which our report has been published; but, when it is considered that each manuscript had to be carefully examined, each entry page compared with the several reports, all the awarded diplomas to be separately written and prepared, and the whole to be transcribed, and also that the entire duties of treasurer devolved upon the present secretary, no one will think hard of us, but will accept our apology. By order

J. M. SHAFFER,
Recording Secretary, State Agricultural Society,
Fairfield, Iowa.

## TREASURER'S REPORT.

As treasurer of the society, we beg leave to report that it was impossible, from the irregular manner in which the money was handed us, to make a perfectly accurate return of the receipts. They amounted to not less than one thousand dollars. After all the expenses and premiums are paid we have a balance on hand of fifty dollars, not sufficient to pay the expenses of the publishing committee, but the president will advance the balance. We have besides (not counted in the above) about fifty dollars of counterfeit, or otherwise worthless money. We have, therefore, no tangible means for the progress of the next fair; but, trusting to the energy and enterprise of our farmers and mechanics; trusting to the diligence of the committee to memorialize our next legislature, and trusting to the zeal and industry of the officers of the society, we promise abundant aid; and we insure to all a fair in 1855 far superior in all respects to that which has just passed.

J. M. SHAFFER,
Treasurer, *pro tem.*, Iowa State Agricultural Society.
Fairfield, Iowa, November 14, 1854.

The following is from the *Iowa Farmer and Horticulturist*, of October, 1854:

### FEMALE EQUESTRIANISM AT THE STATE FAIR.

The following communication was intended for the September number of the *Iowa Farmer*, but was not received until that number was in the hands of the binder. That it may obtain as early and extensive publicity as possible, we publish it in the newspapers of this city, with the request that other papers in the State, friendly to the aims of the society, will publish it.

For a perfect understanding of the reasons that have drawn forth this liberal premium from Colonel Claggett, it is proper to say that a young lady of this vicinity, who is both a reader and contributor to the *Farmer*, inquired in the August number how it happened that whilst premiums were awarded by the State societies in Indiana, Ohio, and elsewhere, for the best female horsemanship, none were offered to be given in this State. Colonel Claggett assigns the reason why it was not done by the State society, and very liberally takes the burden off their hands. His generosity and public spirit can not be too highly commended.

We hear of young ladies who are already putting them and their horses in training for the contest.—*Editors Iowa Farmer.*

KEOKUK, IOWA, August 29, 1854.

*Editors of the Iowa Farmer:*

GENTLEMEN.—I perceive by the last *Farmer* that some of your correspondents are complaining that no premium has been offered (in list of premiums to be awarded at the State fair) for the best plow. You are right in supposing it to be an inadvertent omission. The officers of the society, in making out the list, were very anxious to do full justice to every department connected with the object of the society. But it was impossible to avoid some oversights or mistakes. We feel obliged to any person who may point them out, and we will endeavor to have them corrected. A premium will be awarded for the best plow, under the discretionary list.

I can assure your fair correspondent Louisa, that the cause of her complaint was not overlooked by the officers of the society in making out the list of premiums, but we were afraid that our funds might be insufficient for the purpose. My gallantry, however, will not permit her appeals to go unanswered; consequently I have directed a premium to be offered at my own expense, of a fine gold watch, to the boldest and most graceful female equestrian, who shall enter the list; each lady to be accompanied by a cavalier. The premium to be awarded under the direction of a committee composed of ladies and gentlemen.

Now, come on, Miss Louisa, with all your female friends, as this is to be a fair test of superior horsemanship among the ladies of Iowa. There must be no backing out, now, as the banter is accepted, and the watch will be ready for delivery to the fair winner.

THOMAS W. CLAGGETT,
President of State Agricultural Society.

FAIRFIELD, IOWA, October 24, 1854.

The board of officers of the Iowa State Agricultural Society met at Clinton & Baldwin's office.

Hon. Thos. W. Claggett, president, in the chair.

The committee of arrangements offered the following report:

*To the Board of Directors of the State Agricultural Society:*

The undersigned, your committee of arrangements for the fair, to be held in Fairfield, Iowa, on the 25th of October, 1854, would respectfully report: That they have prepared the ground for the fair in as suitable a manner as their means and the season would admit of; that they had the control of no means of the society whatever to operate with, and the dry season has made it very hard for the committee to procure lumber to arrange the grounds, as they otherwise would have wished to do.

Your committee would report to the board that they have procured six acres of ground adjoining the town of Fairfield, and have enclosed the same with a substantial straight rail fence, ten feet high; that they have erected a shed on the north side of the enclosure, two hundred and fifty feet in length and twenty feet in width, with a table under the same, the full length of the shed, and about five feet wide; that they have erected stalls upon all sides of the enclosure, one hundred and thirty of which are large, ten feet wide and twelve feet deep; they have built, also, about sixty rail pens, for sheep, hogs, etc.; they have also made a track in the enclosure, 1,500 feet in length and twenty feet wide, with a substantial rope guard around the same, leaving a space around said track from thirty to one hundred and fifty feet in width for visitors.

Your committee have also erected an office for the board of managers, twelve feet by twenty-five feet; and a stand in the center of the enclosure for the speakers, chief marshal, and committees upon female equestrianship, and for other committees, if the board deem it advisable to place them there.

The committee have expended, as nearly as they can now ascertain, the sum of $322.20 for lumber, canvas, nails, labor, etc.

Your committee have borrowed the sum of $220, and they have obligated the society to refund the same immediately after the close of the exhibition; and they have received the sum of $62 from the secretary of the board, which he has collected from membership fees, leaving the amount of debt unpaid, $48 80.

Your committee would further report that they believe they can realize from the sale of lumber and canvas, after the fair, the sum of $150, which will leave the sum of $110 that the society will have to refund to your committee to meet the amount of indebtedness for which they are personally responsible.

The committee have also appointed a chief marshal and five assistant marshals, and a number of policemen; also door, or gatekeepers, for the fair.

Your committee would recommend that the board charge an admission fee, to all visitors, of twenty-five cents each day of the fair, and would recommend that members of the society, and their families, except males over twenty-one years, be admitted free.

Your committee would urge upon the board the impropriety of admitting any horses attached to any vehicles whatever, in the enclosure, unless it is by order of the board, when the committee are to inspect horses, etc., for the purpose of awarding premiums, and then they should be taken inside the circle, in the fair ground.

Your committee would report unfavorably, to the admission of carriage with visitors, within the enclosure, unless the number of visitors should be so few, that it would be necessary to raise money for the society, and that there should be ample room for such carriages, and if admitted at all, that each carriage with two horses should be charged seventy-five cents, and a buggy with one horse fifty cents in addition to the usual fee of each person in the carriages.

Your committee would recommend that the female equestrianship should take place on the afternoon of Thursday and Friday, at three o'clock of each day, thus affording many persons an opportunity of seeing that part of the fair that could not see it if it took place on one day only, and will thus be a greater source of revenue to the society.

Vouchers for the amount of money expended by your committee are herewith presented.

All of which is respectfully submitted,

C. Baldwin,
J. M. Shaffer,
B. B. Tuttle,
D. Sheward,
J. M. Slagle.
Committee

Cass County Exhibit of Grains and Vegetables, Iowa State Fair, 1904.

# PRESS REPORTS OF THE FIRST STATE FAIR.
## 1854.

[From the Fairfield Ledger, November 2, 1854.]

The first fair of the Iowa State Agricultural Society was held at this place on Wednesday, Thursday and Friday of last week. The attendance was large—far beyond our most sanguine expectations. For several days before the fair strangers commenced pouring into Fairfield by scores; the day before the fair commenced they came by hundreds; and on the first and second days of the fair they crowded in by thousands. Such a concourse of people never before assembled in Iowa. We think we are safe in estimating the number at seven or eight thousand. Every portion of the State was represented, and all seemed deeply interested in this first great organized struggle of the agricultural interests of Iowa. The zeal manifested by the thousands who met together in the great agricultural peace counsel, amounted to enthusiasm, and augured well for the future of the State society. Every member of the society seemed to manifest a determination that the word "fail" should never have any connection with the great agricultural movement, of which the late fair was the first development.

The first day was devoted to the exhibition of stock, and we doubt whether any State fair in the Union ever had a finer display of choice stock at their first State fair, than was on that day exhibited by the enterprising Hawkeyes. Horses, cattle, mules, sheep and hogs, of the best quality, finest blood and most perfect development, were on the ground in large numbers, and in the best possible condition. There were many animals in the above classes of stock that would attract attention at any State fair in the Union. One mule was very large, measuring sixteen hands high. We were somewhat taken by surprise when we saw such an array of thoroughbred stock; but there is no telling what people can do in such a State as Iowa, until you give them a chance to "prove out."

The second day was one of greatest attraction. To attempt to enumerate all the articles on exhibition on this day would require much more time and space than we now have at our command.

The display of agricultural implements was very good, consisting of plows, harrows, corn planters, reapers, threshing machines, fanning mills, corn crushers, and, in fact, nearly everything that the farmer could wish for. There was one reaper that combined with it an apparatus for raking, which struck our mind as being one of the greatest improvements on the ground. We did not learn the name of the patentee, but understand that the machine belongs to Mr. Gaines of this county. If it reaps as well as it rakes, it is a most invaluable improvement. We noticed that our friend Ray, of Burlington, had some very fine plows on the ground which were universally admired. Not having worked on a farm for several years, we are not much of an agricultor now; there having been so many improvements in husbandry we would feel at some loss now to go about it, but judging from the principles which seemed to be combined in the various implements of husbandry exhibited, we incline to the opinion that there were none of them unworthy of being fairly tested. There were various other articles displaying the development of Yankee genius to no small degree, such as pumps, looms, washing machines, churns, etc., but so numerous that it would require our entire paper to notice them all.

We must here observe that the museum of Dr. J. M. Shaffer attracted a good share of attention. It was composed principally of snakes, lizards etc.,—there being upwards of one hundred—preserved in spirits. It was commended by all, and we really think the doctor deserves credit for his energy in collecting such a curious assortment of the snake tribe.

There was also a fine collection of birds, prepared by Mr. Moore, of Ft. Des Moines. At his home he has a collection of all the varieties which are found in our State. He must have a peculiar way of preserving them, for the birds all looked very lifelike. Why do not more persons turn their attentions to the preservation of reptiles, birds and animals to be found in our State?

But one person displayed daguerreotypes, Mr. J. P. McKinney, from Dubuque. He had some of the most splendid pictures we ever saw. He showed us some mezzographs—daguerreotypes on paper, which were very fine, and for which, we believe, he has the patent. Mezzographing will, in a great degree, supersede mezzo-tint engraving, as it is cheaper and easier. He will take a copy of one's countenance, and from this copy he will take any number of pictures without the person having to sit for them. We also saw some daguerreotypes with convex plate and glass, which threw out everything in bold relief. If we should happen at Dubuque we are going to have our countenance ''tuk.'' We understand that there were several who had their pictures entered, but would not put them up. They could not compete with Mac.

Our friend J. Reagin Shamp had a very fine painting of Daguerre, but we believe there was no premium offered for oil paintings.

The ladies' department gave evidence that many fair hands had been busily engaged for months in the preparation of articles for exhibition; and we are now prepared to place the ladies of Iowa in opposition to ''all the world and the rest of mankind'' for the manufacture of anything that the hand of woman can manufacture, whether it be with the loom, the needle or the pencil.

The display of fruit was very fine, considering the season. It was much better than we expected. The apples were fine and the variety extensive.

By the way, the premium pumpkins were presented to us by our old friend David Switzer, which are enough to keep us in pumpkin pies and ''sass'' for a long time to come.

The dairy was well represented. Butter and cheese were plenty and of the very best quality. The Western Reserve must look to its laurels, or Iowa will soon wear them. One cheese, weighing three hundred and sixty pounds, was presented to Governor Grimes by his Lee county friends. It was a ''smasher'', enough to last him until he goes where ''old Father Grimes, that good old soul,'' has gone.

Of agricultural productions there was a fair display. Some specimens of wheat exhibited were superior. As to the corn it is useless to talk of finding any better. One sample of oats was the best we ever saw. In short, the entire exhibition was highly creditable to the State and did honor to those who were engaged in it.

The great attraction of the day was the female equestrianism, which came off at two o'clock in the afternoon of the second day, and at ten o'clock A. M. of the third day. The prize was a gold watch, valued at one hundred dollars, and ten ladies, accompanied by their cavaliers, entered the list to contend for it. The number of persons who were present to witness this attractive feature of the fair was immense. The committee awarded the prize to a Miss Turner, of Keokuk, much to the disappointment of the people, who were decidedly in favor of awarding it to Miss Eliza Jane Hodges, "the Iowa City girl"; we were one of the people. We had intended to say something about how they were dressed, but so soon as we learned how the prize was awarded, we were so "put out" that we had no inclination to note their dress, and forgot everything else but the "Iowa City girl." In our humble opinion, Mrs. John Eckert—the lady dressed in blue—was decidedly the most graceful rider on the ground. When the award was made known, the people set about it and made up a purse of one hundred and sixty-five dollars for Miss Eliza J. Hodges, and some other presents, and further made provision for her attendance, free of all charge, for three terms at the Female Seminary at this place, and one term at the seminary at Mt. Pleasant, all of which she gratefully accepted, as a sensible girl would, particularly the educational portion. Miss Hodges is quite young, being but thirteen or fourteen years of age; but she certainly displayed the best horsemanship we ever saw displayed by any female. The bold manner in which she fearlessly galloped around the enclosure was really intensely exciting. The marshals could not keep the people from showing their approbation in loud shouts. Miss Kate B. Pope was there. We know Kate to be a fine rider, but she rode a miserable hack for a horse; she did well, however. We suppose the committee, in awarding the prize, acted conscientiously, but there was a large majority of the people against them, and we want it distinctly understood we were one of them.

The address was delivered by George C. Dixon, of Keokuk, who was listened to attentively by a large concourse of people. He delivered a very sensible address, which will be published.

The premiums were awarded on the third day, and we hope soon to be able to lay them before our readers, when it will be seen that Jefferson county came in for a full share.

On the morning of the third day the members met for the purpose of appointing officers for the ensuing year. Thomas W. Claggett was continued as president, and Dr. J. M. Shaffer as secretary. It was determined to hold the next fair at this place, when the people may expect to see a differently arranged enclosure, and everything put in better shipshape. This being the first State fair, the officers were not willing to expend much money, not knowing how it would take with farmers generally. They need have no fears for next year. The next annual State fair of the society will be held at Fairfield, commencing on the second Wednesday in October, 1855, and continuing three days. We hope the interest manifested during the late fair will increase tenfold before the second Wednesday of October, 1855; and, in the meantime we hope that the general assembly, at its next session will do something handsome for the society. It deserves it, for it is doing more to develop the real wealth of the State than any other organization in existence.

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[From the Burlington Daily Telegraph, Tuesday, October 31, 1854.]

## STATE FAIR AT FAIRFIELD.

### TEN THOUSAND PERSONS PRESENT AT ONE TIME—GREAT TIMES AND GREAT ENTHUSIASM—FIRST, SECOND AND THIRD DAYS.

We recur with pleasure to this most interesting subject. As stated in our last, the weather was delightful, and the attendance unexpectedly large, and the whole affair went off with a spirit at once gratifying to our State pride, and commenable in every respect. Arriving early in the morning of the first day, we found every avenue of the town crowded with people, horses, and every manner of vehicle, and all the hotels crowded to overflowing. The good citizens of the place, however, determined to make themselves equal to the emergency, and lost no time in providing comfortable quarters for the rapidly ingathering comers, so that by noon every man upon the ground knew where to find an excellent "eating and sleeping place." Being among the number who were early cared for, we were left at liberty to repair immediately to the fair grounds.

### *First Day—Wednesday, October 25, 1854.*

Arriving at the grounds, we were ushered into an enclosure of some six acres, provided with a display room, committee rooms, places for machinery and agricultural implements, stalls and pens for cattle, etc., and in the center of the ground a handsomely graded circular track some thirty feet in width and about a third of a mile around, which had been prepared for the accommodation of the lady equestrians.

It is proper to state here that this enclosure was not more than a quarter as large as it should have been, in the other arrangements as extensive or convenient as the occassion required, yet, as a first effort the managers are fairly entitled to commendation, with the understanding that they will do much better next time. Extensive booths with elevated seats where ladies and gentlemen may be comfortably seated, together with a fine band of music, are requisites which should not escape attention in the future.

The first item of note on the morning of the first day was the presentation of the great Denmark Cheese to the Governor elect. This was a sort of side affair and not connected legitimately with the fair proper. The heese (which was the joint work of many families on the last Fourth of July, and which weighed nearly four hundred pounds) had been purchased by some of Governor Grimes' friends at the Lee county fair, with a view of presenting the same to him at the meeting of the State Fair. An appropriate speech was made on the occasion by Mr. Howell, of the *Keokuk Whig*, on the part of Lee county, to which the Governor elect responded in his usual felicitous manner. Shortly after this the fair was opened in due form, under the order of its popular president, Colonel Claggett, of Keokuk, and the Marshals, mounted on horses and distinguished by appropriate badges, resumed their respective positions on the grounds. We regret that we have not the names of these gentlemen, as it is due to each and all of them to say that they discharged their duties with a faithfulness and earnestness which entitled them to the highest meed of praise. The good order which reigned supreme at all points and throughout the whole of the three days, while honorable to the assembled multitude, afforded a most gratifying proof of the tact of Doctor Ware and his efficient marshals.

It is impossible to specify in the brief space to which we are confined the numerous and superior descriptions of stock, farming utensils, domestic and mechanical manufactures, grains and vegetables, and products of art and science which were presented for exhibition. Let it suffice that the display in every department was highly respectable and in very many of them far superior to the best expectations. We were particularly pleased to hear the most competent judges declare they had never seen finer specimens of stock, especially cattle. Van Buren county, we believe, carried off the ribbon in the Durham line.

The display of horses of every grade and strain was highly respectable. A very large number were out for exhibition, consisting of stallions, riding horses, carriage horses (matched), buggy horses, brood and draft mares, colts, etc. There were prominent among others, three Morgan horses, two of the Black-Hawk breed, and one of Sherman stock, the two former taking the ribbons. Of mules, jacks and jennetts, there was a very fair display, and a most liberal attendance, and the audience was pretty constantly telegraphed of their continual presence.

Des Moines, and several other counties, produced some superior specimens of fine blooded sheep. We are not advised as to the breeds that are preferred.

Several varieties of fine hogs were on exhibition; among them some of the largest ever raised in the State. The different breeds appeared to attract much attention among the farmers.

The live stock, together with the machinery, mechanical manufactures, and agricultural productions, were all inspected by the committees on the first day, but the articles, except a portion of the live stock, were continued on the grounds throughout the full term of the fair.

### *Second Day—Thursday, October 26, 1854.*

Womandom in the ascendant!

Early in the morning an enlivening scene was presented in the ladies' department, or that devoted to domestic manufactures. The ringing of merry voices, the flitting about of fairy forms, the glances of bright eyes, and busy play of pretty hands, all denoted that the womandom had entered the lists in earnest. The display of needle work, knitting, pressed flowers, etc., was really beautiful, evincing the most refined taste as well as consummate skill; the useful and the ornamental alike challenging universal admiration.

Among the works of art which found a place under the awnings we were particularly struck with several specimens of daguerreotypes from the room of Mr. McKinney, of Dubuque, which for elegance of finish would fairly rival, if not equal, the most superb specimen to be found in the largest galleries of the country. In the immediate neighborhood of these were two large glass showcases, filled with stuffed birds and pickled ''sarpints,'' all looking as natural as life, and attracting very general attention; the work we are informed of a Fairfield gentleman, whose name we were unable to learn.

At 11 o'clock, Mr. Dixon, of Keokuk, who had been appointed for the purpose, was conducted to the stand, and commenced the delivery of the first annual address before the association. The address was about an hour in length, and was all that might have been expected from the accomplished and experienced author. As it has been ordered published, and will soon be before the public, it would be useless to attempt to give a synopsis of it. At the conclusion of the address the association adjouned until 2 o'clock.

### THE EQUESTRIAN CONTEST.

At the appointed hour the fair contestants, ten in number, accompanied by their cavaliers, entered the ring under the conduct of Chief Marshal Ware. For a more satisfactory account of this brilliant feature of the fair, we shall have to direct the attention of the reader to a subsequent article, in which we shall attempt to convey a faint impression of the scene. At the termination of the riding, and with the unanimous concurrence of the ladies, judgment was deferred until a second trial could be had on the following morning.

### *Third Day.—Friday, October 27, 1854.*

The morning up to the time of ten o'clock was occupied in electing officers for the ensuing year, and in fixing upon a place for the meeting of the next Annual State Fair. Fairfield was fixed upon as the place, and the second Monday in October as the time. Colonel Claggett was unanimously elected president; D. P. Inskeep, of Wapello county, vice president; J. M. Shaffer. secretary; and C. Baldwin, treasurer; P. L. Huyett, corresponding secretary; and a large number of directors, whose names will be published hereafter.

At ten o'clock the ladies, accompanied by their escorts, again entered the ring. Their spirited carriage, the confidence which beamed from every eye, and the smile of pleasure which lighted up each fair face, reassured the throng that they were genuine pluck, and eager to enter upon the new contest.

For full particulars see another article.

At the conclusion of the riding the Association assembled for business, and after a brief session adjourned, and thus ended the First State Fair of Iowa.

### FEMALE EQUESTRIANISM AT THE STATE FAIR.

Ten thousand persons present! Two days' contest! Exciting scenes! Unbounded enthusiasm! The "Hawkeye Girls" forever!

Our readers will please excuse us for pretending what we really are on this occassion, all excitement and enthusiasm. Honored with a prominent position in the proceedings, and having had a full view of the whole exciting scene, from a most favorable point of observation, we feel that we owe it to the public, as well as to those who were present, both participants and spectators, to attempt a description of this most thrillingly interesting and sublimely beautiful spectacle which has ever been presented within our borders, if indeed it has ever been equaled in the history of the county.

For the information of readers from abroad, we would premise that the immediate, moving cause of the contest to which we refer, was a magnificent prize (a lady's superior gold hunting watch), which had been provided at the private cost of the president of the association, Colonel Claggett, whose gallantry as a gentleman is equalled only by his public spirit as a citizen, to be awarded for the "best specimen of bold and graceful female equestrianism." The proposition orginated with a lady of this county, who we regret to state, was prevented from even witnessing the triumphant result of her suggestion, much less take an active part in the contest, as was her original intention.

The afternoon of the second day of the fair was the time fixed for the trial of skill, gracefulness and courage among the fair contestants. At the hour of two o'clock P. M., ten ladies, splendidly arrayed in long and sweeping riding habits, with feathers and ribbons to match, each acompanied by her cavalier, entered the ring at a dashing pace, galloping around in long column until they reached the front of the committee's stand, where they were halted and wheeled into line by Chief Marshal Ware. The committee appointed to arrange the order of proceedings and to make the awards was composed of the following persons: J. M. Morgan, chairman, Des Moines county; Judge Lowe, of Lee; Col. T. H. Benton, Jr., of Johnson; Colonel Trimble, of Davis; Mrs. P. L. Huyett, of Jefferson; Miss Albertson, of Lee; and Miss Inskeep, of Wapello.

The president, Colonel Claggett, made them a brief address, in which he complimented them for their splendid appearance, thanked them for the pleasure which he was sure their performance would afford to all present; congratulated them on the courage which they had shown in setting so noble an example; dwelt briefly upon the advantages and attractions of superior horsemanship; and concluded by admonishing them against the dangers of reckless riding, and endeavoring to impress upon them the fact that excellence in female equestrianism consisted in coolness, self-possession, gracefulness and posture, and the perfect management of the horse, and that boldness, as applied to female accomplishments, never could imply that approach to recklessness which endangers either life or limb.

After the president had concluded, Captain Huyett, corresponding secretary, called the roll of competitors, as designated by their ribbons. All being present, the chairman of the committee announced the following as the regulations to be observed on the occasion:

1st. Ladies will ride in the order which their names are registered upon the books of the secretary.

2d. Each lady, as called in order of her number, and accompanied by her cavalier, will ride once around the circle, when the cavalier will retire to the center, keeping within convenient distance of the lady to render any service she may require.

3rd. Each lady, after the withdrawal of her cavalier, will be entitled to ride four times around the circle at any speed she may choose. After completing the fourth circuit she will retire to the center.

4th. After the equestrian contest shall have been decided, the ladies accompanied by their respective cavaliers, will have leave to make the circuit of the ring six times at a gait not exceeding that of an easy canter.

After the reading of the rules, the riding commenced in the following order, the ladies being called by Captain Huyett to take their positions upon the course as they were respectively designated by ribbons:

No. 1. *Barred red ribbon*. Miss Minton, of Van Buren county. A fair rider, but unfavorably mounted; her horse rough and somewhat unmanageable. With a good horse she would have compared favorable with most of her competitors

No. 2. *Broad blue ribbon*. Miss Hodges, of Johnson county. A little girl thirteen years of age, and decidedly the lioness of the day and the pet of the people. She was mounted upon a magnificent blood bay, all action, and so full of power and spirit that but few of the best of horsemen would venture to back him; yet under the instinctive tact of a little heroine, he was made to keep the track and guage his gait to suit the rider's pleasure. She gave him little time to conjure up mischief, but gave him a free rein at the start, and an occasional remembrance from her whip; she brought him so far under the first round that he was contented to drop down for a few moments to a trot, from which at the will of his mistress he rose to a canter, then to a lively charge, and thence to ''his prettiest tricks,'' which were fearfully swift, but which evidently suited himself and his fearless rider, as well as the whole crowd a great deal better than anything else. A long, loud shout greeted the daring little equestrain as she completed her last round and wheeled with the rapidity of lightning from the course.

No. 3. *Pink ribbon*. Miss Turner, of Lee county. An easy, self-possessed and graceful rider. She was finely mounted, and showed consumate skill in the management of her horse, striking any gait at pleasure. The first round set everybody to thinking and admiring, and each succeeding one only added to the interest which its predecessor had excited. Her elegant form, fine face, and soft blue eyes also rather seemed to heighten the effect than otherwise.

No. 4. *White ribbon*. Miss Parks, of Lee county. A handsome rider, full of courage and well accomplished in the management of the reins and whip. She sets a horse superbly, and rides with striking ease and gracefulness.

No. 5. *Yellow ribbon.* Mrs. Eckert, of Jefferson county. A splendidly appearing lady, a capital rider, but unfortunately her horse, though a fine one, was not gaited for such an occasion. Her style of riding is perfect, and attracted universal admiration. She made the rounds in good time, but at a somewhat uniform pace, which was not her fault. We set her down among the number ones.

No. 6 *Barred green ribbon.* Mrs. Green, of Lee county. A magnificent rider, spirited, graceful, confident, but badly mounted. Like Yellow Ribbon she had a magnificent pacer of Copper-bottom stock, but we will say this for her, she rode like a queen and made him come under two-forty.

No. 7. *Light blue ribbon.* Miss Pope, of Henry county. An all-fired fine young lady, full of life, full of spirit, full of fun, and full of ambition, and naturally a fearless and first-rate rider; but she, too, had the misfortune to pick up a most malicious horse. We thought she served him right, when yielding to the impulse of a little feminine dander, she put him through to the tune of about forty licks to the jump. Everybody was on her side, and about the same majority against her horse. Hope to see her in the list again.

No. 8. *White and green ribbon.* Miss Porter, of Henry county. A lovely young miss of fifteen; a charming little equestrian, tastefully arrayed and beautifully mounted. Her personal appearance, the exceeding beauty of her palfrey, and the childlike naturalness, and yet womanly grace which characterized her performance called forth general applause and commendation. The truth is, her darling "Little John" had recently acquired the moonlight accomplishment of running away with people (hope she will never imitate his dangerous example), hence there was slightly manifest in her manner a certain air of cautiousness. ("Little John" has also acquired the very bad habit of sticking his nose in his breast and running with the same speed as if it stuck out "a feet," hence he laughs at the power of the bit.) We have this to say of Miss Porter, her pleasant remembrances are of the past, her real glory is in the future.

No. 9. *Green ribbon.* Miss H. Ball, of Jefferson county. A very fine rider, self-possessed, skillful, and perfectly at home in the management of the rein. Her performance was much admired, but her steed was somewhat too tame for the occasion.

No. 10. *Deep blue ribbon.* Miss Cynthia Ball, of Jefferson county. An excellent rider; entitled to rank with the number ones anywhere. Her position was perfectly natural, and of course extremely graceful, and her manner at once modest and fearless. Nothing but an unfavorable horse prevented her from exhibiting that high degree of excellence which evidently belongs to her.

With the performance of Miss Cynthia Ball the riding was ended, but ended only for the day. A universal desire being expressed that the riding be repeated; the ladies unanimously consented to another trial; the decision of the committee was of course withheld.

At ten o'clock on Friday, up to noon (third day of fair) the fair contestants mounted as on the previous day, made the second grand entree, each one evidently more full of confidence and more ambitious to display her skill and courage. Making the circuit of the track in the same handsome and imposing style as on the preceding day they reined up in front of the committee's, when the chairman announced the following order of proceeding:

1st. Ladies will ride in the same order of numbers as yesterday.

2d. The company of the cavalier will be dispensed with, excepting as an attendant within the circle.

3d. Each lady will be entitled to ride four times around the circle, with liberty to withdraw on the completion of the second or third round.

The riding was then commenced as on the day previons, Barred Red Ribbon leading off, and achieving a highly creditable performance.

Next came the popular favorite, Broad Blue Ribbon, who was this morning more than herself, and put the ball in motion by going through the most dashing, terrific and perfectly dare-devil performance ever witnessed on horseback. The scene was thrilling, fearful, magnificent. The boldest held their breath as, mounted on her proud and untamed charger, she flew round the course with the rapidity of lightning and with the sweeping force of a whirlwind, and all this with a childlike smile upon her countenance and her whip in full play, thus imparting to all a more than half assurance that the daring little rider was equal to the emergency and abundantly able to take care of herself. At the completion of the fourth round, and still at full and fearful speed, she wheeled gloriously from the track and was greeted with an earthquake of cheers as she brought her bounding animal to a graceful halt in front of the committee's stand.

The daring example and triumphant success of Broad Blue Ribbon excited lively ambition among all of the ribbons, and it was evident to all that from that time forward the scene would be made exquisitely beautiful and charmingly animating.

Pink Ribbon led off with a gracefulness which is all her own, and with a spirit equal to the grandeur of the occasion and the intense enthusiam which had been aroused. Her most successful performance seemed to keep up the fever heat of excitement and she made the rounds in good time and splendid style.

So, also, with the balance of the fair competitors, all of them appeared to be animated with the same spirit, and as each lady in her proper order entered upon the round, it was manifest that she had made up her mind to prove herself worthy of the prize, whether she would win it or not, and we are happy to state that there was not a failure among them. The riding of the second day, besides more exciting was more pleasing than on the previous one. The ladies then looked more lovely—at least we thought they did—but this may have been the result of better acquaintance, or of a bright October morning, or of a certain fire which the excitement of the moment had kindled within; at all events, they were transcendently charming, and all Hawkeyedom then and there present unhesitatingly acknowledged the corn and bowed to the magic of beauty. The last round being accomplished and all the ladies with their cavaliers reined up in front of the committee's stand, the chairman made them a short address, after which the ladies, with their cavaliers, were requested to walk their horses gently around the circle, and to take their respective places in line some one hundred and fifty feet from the stand and there await the decision. Meantime, the committee commenced canvassing the claims of the fair contestants when, upon the first ballot, the prize was awarded to ''Pink Ribbon'' (Miss Belle Turner), ''for the most bold and graceful riding.'' Captain Huyett accordingly called for ''Pink Ribbon'' to advance, accompanied by her cavalier, Mr. B. Wilson of Keokuk, when the following proceedings took place:

The chairman, accompanied by Mrs. Huyett (who had been appointed to affix a broad white satin ribbon as an additional trophy of success), descended from the platform; approaching the fair victoress, the chairman, after taking off his new hat and making his best bow, said:

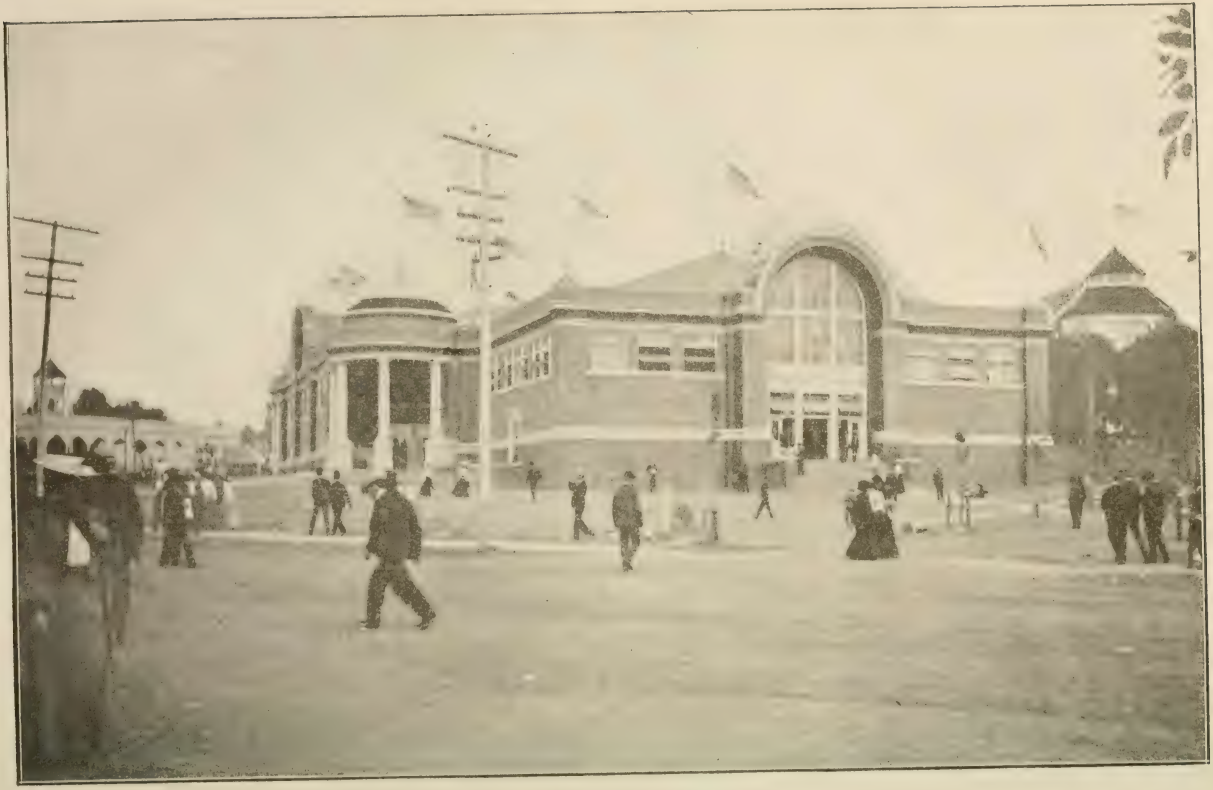
Miss Turner—As the organ of the committee who have designated ''Pink Ribbon'' as the successful contestant on this occasion, I have the honor of presenting to you this beautiful prize. Having won this trophy under circumstances justly calculated to excite your pride, may it ever be your pleasure to wear it as a testimonial of your youthful spirit, your courage and your gracefulness, as displayed before admiring thousands.

The young lady received the gift with a sweet smile, and a graceful inclination of the body, at the same time modestly expressing a doubt as to her merits; in reply to which she was informed that the committee had decided that question for her.

The broad white satin ribbon was then appended by Mrs Huyett and salutes were exchanged, and the lady and cavalier returned to the line, where, after each of the ladies had been presented with a gold ring, by Colonel Claggett, whose generosity knew no bounds, they were dismissed with a handsome speech by that gentleman, and retired in the same order in which they had entered; and thus ended the ceremonies proper as connected with this, the most pleasing event in the history of the State.

The splendid performance of Broad Blue Ribbon, however, together with other circumstances, had so strong a hold upon the popular feeling that they were determined she should not go unrewarded. Spontaneously, as if by concert, men sprang up in all quarters of the field, and in less than five minutes upwards of two hundred dollars were contributed (she is but a child, poor and unlettered), and eighteen months boarding and tuition provided for her.

We honor the noble generous impulses which prompted these proceedings, and rejoice at their success. We, too, were spellbound and overwhelmed at the daring exhibition of the little favorite, and even went so far as to give her the benefit of one ballot, but the sober, second thought teaches us, as it must all, that if we would encourage a tasteful, correct and lady-like school of female equestrianism, such as we should be willing our misses and daughters should imitate, the decision of the committee was based upon correct grounds. The awarding of the prize, therefore, took nothing from the glory of the little girl, and everyone will rejoice to learn that she has been so generously, kind and bountifully provided for. Long may she live to merit the applause of her friends; the daughter of the people, may she ever prove worthy of her benefactors.



Southwest View of Agricultural, Horticultural and Dairy Exhibit Building, Iowa State Fair Grounds.

## PRESS REPORTS OF THE FIFTIETH IOWA STATE FAIR—1904.

### THE IOWA STATE FAIR CELEBRATES ITS GOLDEN JUBILEE.

*The Homestead.*

It was indeed and in truth a jubilee; a golden anniversary, as indicated by the calendar, and an anniversary of gold, as shown by the balance sheet of the Iowa State Agricultural Society. The fair, as an exhibition, had distinct short-comings, but these were so excusable under the circumstances and so manifestly outweighed by its evident merits and the good fortune attending the efforts of its management to please, entertain and instruct the people, that the net result is the heartiest enthusiasm that ever followed one of the exhibitions of this great State fair.

The remarkable financial success of the fair is naturally the principal cause for the contagious good feeling which prevails among its friends and managers. To keep step with the forward march of the State fairs of Minnesota, Illinois and the other imperial states surrounding Iowa, the Iowa state fair must make money. With money in its treasury, it can join its own funds with those of the State in erecting the palatial permanent buildings now recognized as indispensable to the progress of a State fair; the broad roofed walks connecting the different buildings, and the huge and substantial grand stand without which any fair management is handicapped in its efforts to satisfy its patrons and reap the necessary revenues. All these requisites must be speedily forthcoming on the Iowa grounds if the Hawkeye State is to hold her proud position in the front rank of the queenly states of the corn belt.

The receipts this year were the largest by several thousand dollars ever enjoyed by the Iowa fair; enabling the management to carry forward a surplus estimated at from ten thousand dollars to twelve thousand dollars or invest the money in permanent improvements. The fair has three manifest immediate needs, for at least two of which it must depend upon the State appropriations. These are a mile track, a grand stand of large proportions and constructed of brick and steel, and an exposition building of adequate size and character. The additional ground for the mile track should be purchased before the growth of Des Moines forces the price of real estate up to unattainable figures. Probably no wiser expenditure of the surplus could be made than by using it in this direction; but there should be no question about the next two legislatures appropriating from seventy-five thousand dollars to one hundred thousand dollars for a grand stand and not less than two hundred thousand dollars for an exposition hall that will be worthy of the fair and of the State; a structure of steel and masonary that would impress the visitor with its beauty, utility and representative character. An adequate permanent hog pavilion should also go up soon. The days for petty things in the Iowa State fair have gone by.

It was the weather that did it. So superb a week, meteorologically speaking, has hardly been known in the history of ''fair weather'' in Iowa. It was indeed fair weather. From the arrival of the first ticket-buyer on Monday morning till the last spectator walked out of the grounds, turning to take a last look at their splendors, the air was like an elixir. The sun shone genially all the week; the temperature was neither too warm nor too cool for sight seeing, and every minute of the week seemed to be enjoyed by the great, good-natured crowds.

And the crowds! They were the best exhibits. The men women and children of one of these glorious prairie States which boast ''a schoolhouse on every hilltop'' are always a sight to command admiration. Family groups were the rule—husbands and wives with their children; men and women who love and honor each other and respect themselves and who dwell together as equals, bringing up their children to fear God and obey his and their country's laws; believers in progress and exemplifying it in their own lives and work; patriots who sustain their country by their industry, govern it by their honest and intelligent suffrages, and, when necessary, uphold it with the sacrifice of their blood. Here are manhood and womanhood at their best, yet ever striving onward and upward.

The fair and its success were a triumph of courage, energy and intelligence; and President Morrow, Secretary Simpson and their associates would be less than human if they did not exult a little over the fact that they had the nerve to hold a State fair almost under the shadow of the Louisiana Purchase Exposition, the greatest world's fair in history; the brains to plan a programme which could prevail in such a necessarily unequal competition, and the energy to carry the plans to unqualified success. The result vindicates their faith and proves anew the importance of ''never lying down'' in this big, prosperous country of ours.

The attendance was more strongly tinctured with urban elements this year than usual. The farmers were out in large numbers, but not quite in the average proportion. Many of them go to the World's Fair, and think one such outing enough. There was much, too, in the attractions selected to draw crowds from the cities and towns. The famous pacer, Dan Patch, was a great and legitimate feature to draw the bright people of both city and country inside the gates. The military maneuvers, the firemen's contests and the fireworks were deservedly popular. Yet the management did not neglect the educational side of the enterprise; and it stands to their credit and to the glory of the fair itself that the best days in attendance, after all, were those in which the live stock, agricultural, horticultural, dairy and other exhibits were the chief attractions and had and held the crowds.

The weak points of the year were in the showing of horses and machinery. St. Louis, with its conflicting dates, took the horses, many of which would have been exhibited in Iowa and had been promised for the fair. The trust kept away the threshers, on an agreement not to exhibit anywhere. The exhibit of Shorthorns was smaller than usual for the same reasons which reduced the horse exhibit, and yet the cattle show as a whole was superb. There was plenty in the live stock exhibits to keep any intelligent breeder busy and afford abundant food for study. The new agricultural hall, with its varied exhibits of vegetables, fruits, grains, flowers, etc., was a thing of beauty, amply justifying the generosity of the State in its erection. The judging contests were of an epoch-marking character.

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While heartily endorsing the practical wisdom of the management in providing entertainment for the people and thus insuring the attendance and revenues without which the educational features must be sustained in a beggarly manner, we should be glad to see the scientific side of farming exploited on a grander scale than has yet been thought of, or at least exemplified, in our State fairs. The State College of Agriculture and Mechanic Arts, while most creditably conspicuous in all the best features of the fair, could be still more thoroughly represented. It would amply repay the State to provide a large special building in which the methods and results of instruction and work in the college and experiment station could be made plain to the average eye; such an exhibit in agriculture and its allied arts as Harvard University, for example, has of general scientific work at the world's fair. These things must come gradually and, perhaps, one at a time; but they should come surely, and as rapidly as practicable. As Germany is crowding the technical education of her people so as to capture the world's trade; as young, and yet old, Japan is showing how it pays to be thorough in adopting and applying all the teachings of modern science in both war and peace; as other states of the Union are showing greater and greater energy and expending larger and larger means in seizing the opportunities of modern civilization, so Iowa and all the states of the corn belt should quickly and largely respond to the new and liberal requirements of the age in progressive industry and the popular education which lies at its foundations.

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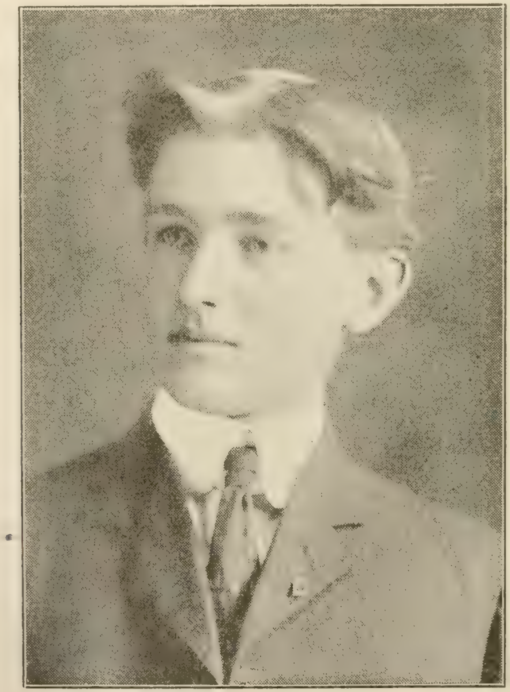
The officers of the fair doubtless realized that the greatest possibilities have not yet been reached, and are therefore open to suggestions that will lead to still greater success. Much improvement may yet be made in the system of judging. More judges should be pressed in service in order that all animals and products may be passed on early in the week. In our opinion the judging should be completed on Tuesday instead of Thursday night, and the premium tickets or ribbons conspicuously placed where the public will derive the greatest benefit from the work of expert judges. This will greatly strengthen the educational side of the fair, and will also confer great benefits upon exhibitors. In matters of this kind we have much to learn from similar exhibits held across the water.

## WINNER OF IOWA SCHOLARSHIP.

*The Homestead.*

We herewith print a picture of Charles F. Steen, of West Liberty, Iowa, who was successful in winning the scholarship which was given by the State Board of Agriculture at the recent State fair in the stock and corn judging contest.

The work of the boys consisted in judging two rings of cattle, one of steers and one of pure bred bulls; a ring of Percheron horses and another of coach horses; a ring of Poland-China and of Duroc-Jersey boars, and ten ears of yellow corn and ten ears of white, with a third lot of ten ears made up of ears brought by the boys. In addition to judging these different classes each contestant was required to bring one ear of corn and was given credit for this according to quality.



**Charles F. Steen, of West Liberty, Iowa,**
Winner of Scholarship in Iowa Agricultural College.

The best work was done in the cattle classes, the scores ranging from 32½ to 94½.

Prof. W. J. Rutherford had full charge of the contest. Professor Curtiss passed on the cattle and horses, the swine judges on the swine and Professor Holden judged the corn.

Mr. Steen made a total of 305½ points out of a possible 400. The second best work was done by Roy Igo, of Indianola, Iowa. He had a total of 286½ points. The winner of third place was J. G. Boland, Williamsburg, Iowa.

## THE IOWA STATE FAIR.

### THE FIFTIETH ANNUAL FAIR THE GREATEST SUCCESS YET RECORDED.

*'Wallace's Farmer.*

The fair management and the people of Iowa and adjoining states have done themselves proud during the past week. Notwithstanding the fact that the corn crop is yet in danger and the strike going on and the Louisana Purchase Exposition in full blast, the attendance and the profit has been greater this year than ever before; and we believe those who attended the fair received more enjoyment out of it than any fair previous. Notwithstanding the early date and therefore the meager display of corn, the exhibit as a whole has been of the finest. There has never been a better showing of live stock, especially of cattle. There have never been more hogs on exhibit; and seldom has there been a better display of fruits and of improved agricultural appliances of all sorts. The improvement of the grounds this year has been most marked. Every provision was made for the comfort, instruction and amusement of the vast crowds that have attended.

The crowd itself is the most interesting subject of study. In fact, the show of the people is about as fine, indeed, finer to most men, than any of their works. Man is always greater than anything that he does, and the people of a State are always better than their handiwork. This must necessarily be the case. The best results of human effort are ever in the future. It is a great pleasure simply to see the crowds of well behaved people of all sizes and sexes and occupations in life mingling freely and pleasantly, without the slightest evidence of intoxication, without hearing a profane or vulgar word. We doubt if there is any State in the Union that can show more orderly, respectable, and self-respecting crowds of State fair goers that the State of Iowa.

All this bodes well for the future prosperity and usefulness of the Iowa Agricultural Department. There will be a handsome profit this year. We can not at this time say how much even approximately. The more the better, for it will all go into improved buildings and other preparations for the comfort and instruction of the people in future years. It is now a half century since this society was organized. It has had its ups and downs, periods of adversity and prosperity. There is here and there one of the old men who attended the fair when he was a boy fifty years ago, just as there are no doubt boys attending this fair who will attend the Centennial fair to be held in 1954. Nearly all of those who were on the fair grounds last week will have passed over, but we old fellows may amuse ourselves at times by thinking over the possible magnificence of the Iowa State fair fifty years hence.

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We congratulate the management on the skill with which they have handled the business of the society during the past year. We congratulate the people that, notwithstanding the attractions at St. Louis, they have patronized the fair here so admirably and so profitably as they have done this year. Last fall when plans for this year's fair were up for discussion there was a sentiment in some quarters against holding a fair this year. It was argued that the Iowa people who cared to attend an exposition this fall would prefer to spend their time and money at St. Louis and the attendance at Des Moines would necessarily be light. The record-breaking attendance of last week shows how badly these croakers were mistaken, and sufficiently vindicates the judgment of the directors in deciding that a fair should be held. The fact is that the Iowa State Fair has reached the point where its success both in exhibits and attendance is assured, barring weather of the most unfavorable character from the start. It has become more and more a State institution and is attended as a matter of course by a very great number of the most up-to-date farmers of the State.

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Last winter we urged our readers to lend their influence toward securing an appropriation from the legislature for a building for agriculture and horticulture. The appropriation was made and the building completed just in time to house these departments and the dairy exhibit for the fair held last week. If there is any member of the legislature or any farmer who saw this magnificent building last week and begrudges the money spent for it we have a pardonable curiosity to know why. It is a beautiful building architecturally, three hundred feet long by one hundred feet wide, with spacious entrances on all sides, well lighted and well ventilated. It is built of hard brick and the construction seems to be strong and durable. There was not time this year to complete the interior shelving and fixtures, but this will all be done before another fair. It is situated only a short distance from the splendid live stock pavilion erected three years ago, and if a person who attended the fair failed to see the agricultural, horticultural, and dairy exhibits it was because he deliberately walked around the new building instead of through it, where the walking was better.

These two permanent structures, the live stock pavillion and the new agricultural hall, are examples of what all the principal buildings on the Iowa State Fair grounds should be. The agriculture of Iowa is substantial and enduring and the buildings used for this great annual exposition should be of the same sort. It is not reasonable to expect that improvements of this sort can be made in a day or a year, but it is reasonable to expect the State legislature will appropriate money sufficient to add at least one new permanent building. Now that the agricultural exhibit is housed where people can see it conveniently, it should within two years grow until it fills every inch of space in the new building and thus make other buildings necessary for the horticultural and dairy departments.

The old horticultural building was this year converted into a rest place for the women and children. The entire building was floored and a broad piazza placed across the entire west side, giving a cool, quiet retreat where the women folks could rest in easy chairs, settees, and swings, and the children could romp and play in perfect safety. For such as were ailing a private room with cots and an experienced nurse were provided. Even with the delightful weather which prevailed the entire week this building was well patronized and many a weary mother found it a rest place in fact as well as in name. Situated on a high hill, it was cool and comfortable during the hottest day, and well removed from the noise and dust.

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Each year the management raises the standard of the sideshow attractions a notch higher. While there were the usual line of monstrosity exhibitors, merry-go-rounds, etc., there was not, so far as we were able to observe, a sideshow or concession which could be seriously criticized as immoral, or tending to corrupt. Too much credit can not be given Secretary Simpson and the directors for the improvement they have wrought in the last four or five years in the concessions admitted to the grounds. In this connection it should be said that the city of Des Moines is deserving of great credit this year. The streets were kept clear of not only sideshows but fakirs of all kinds, while the police department exercised greater care than ever before to protect the visitors from pickpockets, confidence men, and other swindlers. The crowds were well taken care of and well handled both in the city and on the fair grounds.

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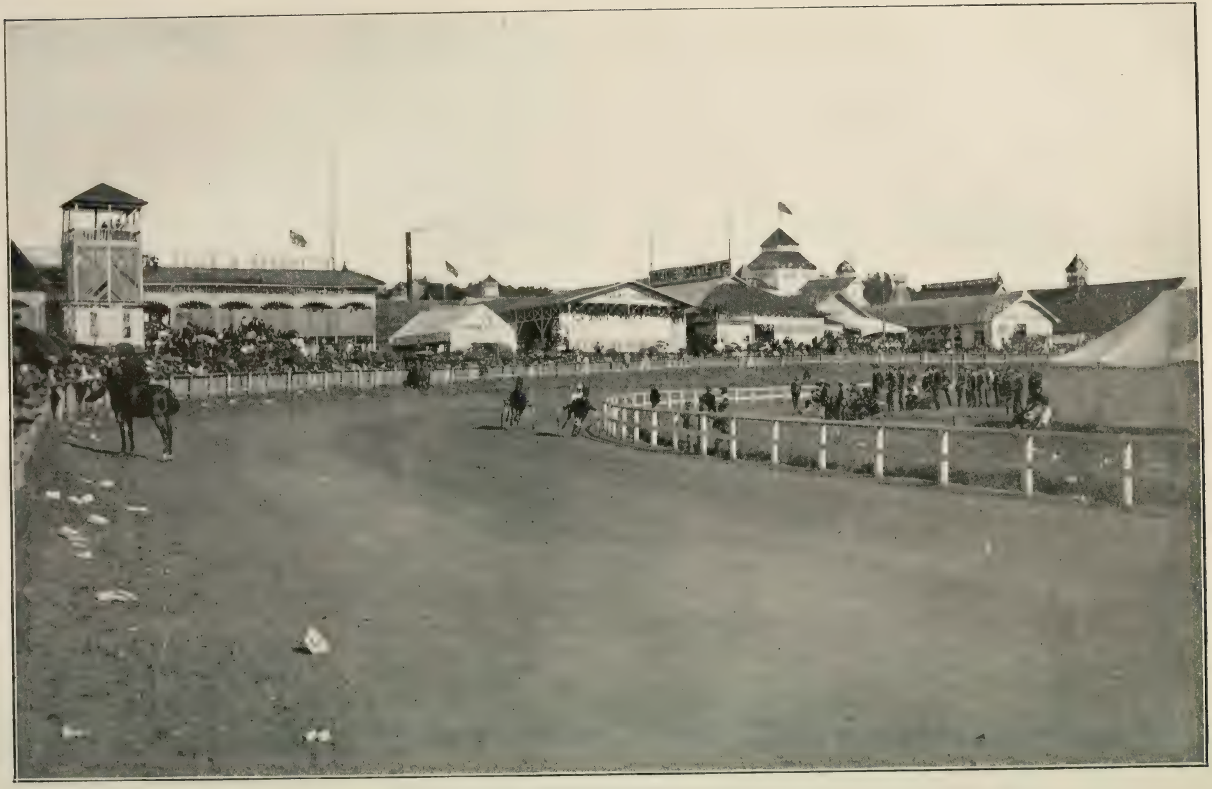
The display of agricultural products, while very fine in quality, was not up to what it should be for the Iowa State Fair. One reason for this no doubt is that until this year the agricultural display was housed in an old building, considerably removed from the main part of the ground, which did not afford a great deal of room, and which was not seen by any except those who had enough interest to make a special effort in that direction. Now that a new, centrally located building has been provided for this exhibit we hope that in the future the agricultural products exhibit will be worthy of the great agricultural State of Iowa. Considering the amount of money hung up for the best county exhibits, it seems strange that there is not more interest taken in these classes. Two hundred dollars is offered to the county making the finest and largest display of corn, seed, grasses, fruit and vegetables from each of the northern, central and southern districts. This purse is divided pro rata and to the exhibit scoring highest an additional prize of twenty-five dollars is paid in each district. But six counties made exhibits. The prize for the northern district was won by Clayton county, the only exhibit made from that district. In the central district first premium was won by Delaware county and second by Polk county. In the southern district Lucas county won first, Warren county second, and Cass county third. The premium for the best display of corn and grasses was won by Polk county, Cass county second, and Warren county third. Premium for the most artistic exhibit of corn in different forms was won by Polk county, Cass county second, and Warren county third. There should be at least fifty different counties exhibit at the Iowa State Fair. If the county fair associations and the boards of supervisors in the different counties would take some interest in this matter and offer some additional money it could be made a display of great value not only to people who visit the fair but to the counties represented in the exhibit. The Iowa State Fair is visited every year by thousands of farmers, manufacturers, and capitalists from Illinois and states farther east. These people should be given the opportunity to see agricultural products from as many different counties in the State as possible.

Professor Holden, who acted as judge, states that the display of vegetables was, so far as quality is concerned, the best he ever saw anywhere. It has been a great year for vegetables of every kind and the exhibitors—who learned from their experience last year that Professor Holden was not satisfied to judge vegetables by their looks, but made thorough examination of their shipping and market qualities—exercised all their skill to raise and select for exhibition samples that would stand the most critical examination. As a result the exhibit of all kinds of vegetables was superb.

One of the most attractive and interesting exhibits in the agricultural building was made by the Iowa Agricultural College. Charts were shown on which ears of corn of different kinds were illustrated, while samples of different varieties of oats and different grains were shown in glass jars. Each jar was labeled with the name of the variety, the date it ripens, the height, the yield per acre, the per cent lodged, the per cent rusted, etc. Samples of corn were shown illustrating the effects of inbreeding, and other samples showing the effects of cross-breeding.

The exhibits in the dairy department were mostly confined to farm separators and machinery adapted to farm dairying. Attractive displays were made by agents of the De Laval, Empire, U. S., Iowa, Reid, National, and Sharpels separators. A novelty exhibited was a farm separator with a bicycle adjustment to furnish the motor power. This consists simply of the pedals and the sprocket wheel of the bicycle attached with chain to a



Scene on back stretch of race track "Dan Patch Day," Iowa State Fair, 1904. Dan Patch and pacer are shown, the former being next to fence.

sprocket wheel on the separator gear and is easily operated by a boy or girl. We do not see why this adjustment should not come into quite general use. It works nicely and we believe should give a more uniform motion than can be given by hand.

The contest for the scholarship at Ames did not bring out as many boys as we had hoped, the total number being thirteen. The work of the boys consisted in judging two rings of cattle, one of steers and one of pure bred bulls; a ring of Percheron horses and another of coach horses; a ring of Poland-China and of Duroc Jersey boars; and ten ears of yellow corn and ten ears of white, with a third lot of ten ears made up of ears brought by the boys. In addition to judging these different classes the boys were required to each bring one ear of corn, and was given credit for his according to the quality. They were also required to put in writing their reasons for making their awards in their different classes. The best work was done in the cattle classes, the scores here ranging from thirty-two and one-half to ninety-four and one-half. The poorest average work was done in the swine classes. The work of the boys in judging was checked by different judges, the general charge of the contest being in the hand of Professor Rutherford. The scholarship was won by Charles F. Steen, of West Liberty, Iowa, who had a total of three hundred and five and one-half points out of a possible four hundred. The second best work was done by Roy Igo, of Indianola, Iowa, who had a total of two hundred and eighty-six and one-half points. He did by far the best work in the swine classes, but was weak in the horse and corn judging. The third best work was done by F. G. Boland, of Williamsburg, Iowa, It was a bright class of boys and every one of them received a great deal of benefit through having entered the contest. The experience Mr. Steen had last winter in our Boys' Corn Contest undoubtedly proved of great help to him in this contest. He won second in our Central District last winter, and he is the kind of a boy who will make good use of his time while at the Agricultural College. We hope the other boys will try again next year.

The fruit crop is excellent in Iowa this year, as shown by the horticultural exhibit, which occupied the south end of the new building. With such an exhibit as this at the fair it seems strange that there should have been talk of abandoning the horticultural exhibit at St. Louis. There was the usual exhibit of fruits from all parts of the State and the arrangement was pleasing and attractive.

Dan Patch the famous pacer, owned by Mr. Savage, of the International Stock Food Company, proved a great attraction. The grand stand was packed to its fullest capacity and the track lined on both sides Thursday afternoon. It was not a favorable day for record-breaking owing to a strong wind.

Scene on Iowa State Fair Grounds, 1904.

## IOWA'S FIFTIETH STATE FAIR.

### *Weekly Live Stock Report.*

Iowa's golden aniversary State Fair held last week at Des Moines was in every particular up to the high standard which a prosperous and progressive rural population has established. It was big, rich, imposing, edifying, clean and high-class. In its comprehensiveness and overwhelming strength it was worthy of the banner agricultural State of the Union. It may be seriously doubted whether there ever has been a greater State Fair than this one. Certainly there has never been one comparable with it in point of interest shown by the people for whom the institution was created long years ago.

More favorable weather for the fair could not have been provided. The weather man was in a happy mood and blessed the fair with cool winds, a clear sky and beautiful nights, making the night attractions a strong feature. Subsequent counts undoubtedly will show that the total attendance was record-breaking, and the probabilities are that the number of admissions each day will be found greater than for the corresponding day last year or any preceding year. Des Moines is a good fair town and Iowa people long ago acquired the State-fair-going habit. As the crops for the most part have been, and are, exceptionally good in Iowa this year, it was to be expected that a standard-setting fair would be held. Expectations were fully realized. Never has there been such a State Fair in Iowa and it is likely that no other State has ever conducted such a successful agricultural show. Stupendous, comprehensive and high-class in every respect, it was the most memorable event in the history of Iowa agriculture up to the present time. Never have the farmers shown such keen appreciation of their own institution. Never has the support accorded it been more widespread and loyal. Verily, this fair has the strength of Gibraltar behind it and the goal of perfection before it

Live stock was the dominant note. Corn was in big evidence. Every agricultural resource of the State was creditably represented. No department was dwarfed or weak, though the equine display was somewhat circumscribed on account of the St. Louis show, which practically monopolized the show horses of the country last week. About one thousand one hundred head of cattle, two thousand five hundred hogs and an overflowing sheep show distinguished the fair. Not only were the numbers large but the character of the live stock exhibit as a whole was first class. Never has there appered at any State fair such an imposing array of top-notch show stock as made this an historical and memorable event. While every bovine breed of prominent commercial importance was strongly represented, the show of black cattle, especially Aberdeen-Angus, was sensationally big and high class. It was by odds the best show the breed ever has made at a State fair, and it is very doubtful whether a better or more uniformly good lot of "doddies" has ever appeared at any of the national shows in this country. Numbers were there and the individual merit and excellent showyard finish f the various entries were the subject of much favorable comment. W. B. eeley's great show cow Vala, repeated the trick which she performed without difficulty at Sedalia the previous week, winning first place in the aged class and the senior championship. To achieve these honors in the formidable company with which she appeared on this occasion is another bright laurel in her elaborate crown. There were rivals in her class which subjected the celebrated matron to the severest trial she ever has undergone. But she is qualified for hard struggles. She is fixed for all comers. Her bulk and general make-up as a modern type of the Angus cow can not be surpassed by the antagonists she met last week. L. McWhorter, of Illinois, made the awards. In aged bulls of this breed W. A. McHenry's Western Star, a noted winner last season, had little difficulty in taking premier position, though C. J. Martin's Juba of Morlich, another 1903 prize-winner of much note, showed to fine advantage in the collection. Every class contained from six to fifteen entries representing about half a dozen of the best Angus herds in America. It was freely conceded that the beef cattle show was made by the "doddies." Nearly every ring contained three or four outstanding show animals, fitted to a nicety and shown to perfection, for Angus herdsmen are experts.

All the judging of cattle proceeded in the big pavilion and when the larger classes were simultaneously undergoing judicial review spectators enjoyed a cattle show which never has been equalled at Des Moines. Angus, Shorthorns, Galloways, Red Polls and Jerseys were judged at the same time and a noisy band played. It is somewhat strange that band music should be provided in the pavilion. It certainly serves no useful purpose, but on the other hand keeps high-strung dairy cattle twisting and nervous all the time they are on exhibition. Music is not needed to attract Iowa farmers to the pavilion. They are sufficiently interested in live stock to spend much of their time in the pavilion without such solicitation. The average band heard at State fairs is unendurable anyway. It is to be hoped that band music will hereafter be kept out of the live stock pavilion.

Shorthorns were shown by W. F. Christian & Son, E. W. Bowen and Hill & Anderson of Indiana; H. S. Bright of Kentucky; F. W. Harding of Wisconsin; C. S. Barclay, R. E. Watts & Sons, J. B. Brown, C. W. McDermott, C. A. Saunders, H. D. Parsons, G. H. Burge and other Iowa breeders. While the exhibit was not weak in numbers it lacked quality and showyard character. Only one or two classes uncovered genuinely good ones. Yearling heifers constituted a strong display and the heifer calves showed well. Prof. C. F. Curtiss of the Iowa State College made the awards, to the general satisfaction of exhibitors. Mr. Harding's massive white bull Whitehall Sultan was first in the aged class and senior champion. Fair Queen owned by Mr. Bowen won the senior female championship. Mr. Bright presented a very showy lot of cattle and was a frequent winner. This was his first appearance in a Northern showring. It is expected that a recording-breaking Shorthorn show will occur at Hamline, Minn., this week. Many of the show herds are reserving for that event, having cut out Des Moines.

Prime Lad, owned by W. S. Van Natta & Son of Indiana, was the feature of the Hereford show. This beautiful bull looks better than ever before. His equal as a showyard proposition has rarely been seen. He was of course the winner in the aged class and senior champion. As smooth as an egg, fleshed uniformly and full of character this animal is a pattern for breeders to imitate. Lorna Doone from the same herd was the champion cow. She was a leading winner at the shows last year, when she was somewhat overdone, but she has begun the campaign this season in admirable condition, her flesh being smooth and firm. She will be hard to beat at any fair, though formidable rivals await her at Hamline. The "whiteface" show was not markedly strong in numbers, but there were enough first class show cattle to hold up the breed's color. E. J. Taylor of Michigan tied the ribbons. John Letham, now manager for S. L. Brock's herd of Herefords in Missouri, presented in the two-year-old class one of the thickest, deepest and best meated bulls seen in recent years. Reference is made to Disturber, a son of Beau Donald 3d. More character in a bull than this one shows would be hard to find. He has a future of fine promise and John Letham is the man to carry along a bull or steer about right.

The Galloway exhibit was generally considered the best ever made in America. C. N. Moody of Missouri had the champion bull in imported McKenzie of Kilquhanity and Gentle Annie exhibited by E. H. White of Iowa was the senior champion cow. Another contest, this time with strong rivals, indicates that Mr. Moody's great bull is reasonably safe for this season. Gentle Annie is not new to the showyard. Two years ago she won prizes and championships galore. She is a rare one in breed character, symmetry, evenness and style. A. C. Binnie, an Iowa Angus breeder, judged the Galloways. O. H. Swigart and C. S. Hechtner of Illinois, C. N. Moody of Missouri, J. E. Bales & Son and E. H. White of Iowa were the exhibitors. In every class there were outstanding good show cattle, uniform in type and creditable in every respect. Galloway breeders may well feel proud of their impressive show at Des Moines. It will make them friends and money.

Only a few draft horses were shown and the exhibit of light horses was below the standard. Some first-rate Clydesdales were shown by C. D. McPherson of Iowa and a few high-class Percherons were presented. The Shetland pony show was very good. Several mules were exhibited. Dan Patch, the celebrated pacer owned by M. W. Savage, proprietor of the International Stock Food Company, of Minneapolis, Minn., was one of the big equine attractions of the racecourse. The grand stand was packed the day he appeared. The hog show was nearly equal to last year's exhibit. Poland-Chinas led in numbers and Duroc-Jerseys followed with a large display of many extra good ones. Berkshires and Chester Whites showed in healthy numbers and breeders need not feel that apologies should be offered for any of their entries. Most of the exhibitors were new men in the showyard. Large English Yorkshires were shown by several breeders and the collection included some of the best animals this breed has produced. It is significant that this great English and Canadian bacon hog has secured recognition at the Iowa State Fair, right in the midst of the "lard" hog belt. In recent years a large number of Yorkshires have been introduced in central Iowa and other sections of the cornbelt. In both numbers and character sheep made a better showing than ever before at Des Moines. It was a topnotch show and all the principal breeds were out in force.

The agricultural, horticultural and dairy exhibits in the handsome new building, 100 by 300 feet, devoted to these industries, were unusually meritorious. The new structure mentioned was built the past season at a cost of $50,000. Never was the display of farm machinery of all kinds more extensive than it was this year. The poultry show was not strong. Several important improvements are in prospect for next year. A manufacturers' building will probably be erected, and a steel grand stand built. Three or four large hog barns with concrete floors, patterned after the admirable swine barn on the grounds of the Minnesota fair at Hamline, will also be constructed. With the exception of the northwestern part, Iowa's corn crop is in excellent condition, and a few more weeks of warm weather will make it safe for harvest. Pastures are as a rule in splendid grazing shape and an unusually generous hay harvest was completed under favorable conditions. It seems pretty generally understood that feeding operations will be resumed by a large percentage of the old-time feeders in Iowa. They will have the corn and hay, and notwithstanding labor troubles at the packing house centers, will hardly abandon an industry which has made them thousands of dollars. While many of them have lost money they have not lost their courage and faith. Reports of big receipts of cattle at Chicago and other points, in the last two or three days have been enthusiastically received by hundreds of feeders and prospective meat makers. It is obvious that if a settlement of the packing house troubles is effected and normal conditions are restored, the beef, pork and mutton making industries will not be slow to adjust themselves to the situation.

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# IOWA'S FIFTIETH ANNUAL STATE FAIR.

## A HALF CENTURY OF USEFULNESS ROUNDED OUT BY THE SUCCESSFUL SHOW AT DES MOINES LAST WEEK.

*Breeders' Gazette.*

Iowa was born lucky because rich. It still retains the wealth and the luck, and both are increasing as a logical result of the fact that its progressive people are learning how to apply intelligent labor to a prodigiously fat soil which lies in a favored zone. Veracious Uncle Sam is authority for figures which prove that it is on top of all States in the production of live stock and corn and at Des Moines last week the Golden Anniversary State Fair corroborated the statistics and reflected the inspiring condition of the State's agriculture.

Nothing marred the fair; everything aided it. Favored by the weather gods and supplied with superior exhibits in all departments it brought to Des Moines the best element of Iowa citizenship. With the rank and file of the State's best farmers actively, loyally and solidly behind it, with the momentum ot fifty prosperous years of steady, substantial progress and with the goal of perfection before it, the State fair takes rank among America's foremost educational institutions of this useful class.

Every day seemingly was ordered to accommodate visitors to the big show, and they came in multitudes from all sections of the State. Tuesday, Wednesday and Thursday were the big days in events and receipts, but the fair was in readiness from the beginning and staid intact until Friday. Financial returns were in excess of those made last year by about five thousand seven hundred dollars.

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Nearly six hundred entries were made in the pure-bred beef cattle section and the exhibits of these breeds established a new record for the fair. In numbers and show yard excellence the beef cattle show was conspicuous. It was the dominant attraction in the live stock department. Pure-bred and grade fat cattle also made an excellent showing. That most of the stock was shown by Iowa breeders emphasizes the fact that it was in truth a State fair. As usual, the show of swine was immense. It overtaxed the very unsatisfactory facilities for housing and showing this class of stock. About two thousand five hundred hogs were shown. The sheep pens were full, and the exhibits of the various popular breeds was larger than ever before at Des Moines. Dairy cattle, consisting of Jerseys and Holstein-Friesians, more than sustained the reputation the fair enjoys for attracting high-class dairy animals. St. Louis is responsible for the dearth of entries in the horse department. This was the one weak spot in the live stock show. Displays of farm crops, butter, cheese, poultry, fruit, honey, pantry stores and sundry products for sale were up to the Iowa standard, and as heretofore the exhibits of agricultural machinery were scattered all over one section of the grounds and occupied all the available space in the inadequate machinery building. It is becoming a perplexing problem at some of the fairs to accommodate the big displays made by implement manufacturers, and Iowa's efficient State fair management is keenly alive to this situation.

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Agricultural, horticultural and dairy displays were made in the handsome new building erected the past year for these exhibits. It is 100x300 feet, has compressed brick walls, is roofed with slate and painted sheet iron, and is situated at the base of the fair grounds hill about two hundred yards north of the live stock pavilion. It has been christened the Agricultural, Horticultural and Dairy Building, and was erected at a cost of $50,000. From an architectural viewpoint it is an admirable building, as light as outdoors and as well ventilated, but it undoubtedly was a mistake to floor it with the material used, which seems to be a mixture of tanbark and sawdust spread on clay. Concrete is the right kind of flooring for all buildings of this character. Certain advantages may be derivable from earth floors, as when it is desired to drive stakes to hold particular exhibits in place, but concrete floors are cleaner and better. It is impossible to keep the atmosphere free from clouds of choking dust in buildings provided with dirt floors.

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Iowa's State fair equipment is not first-class. Its live stock pavilion and the agricultural, horticultural and dairy building are practically the only high-class permanent structures on the grounds. All the other buildings are of wood construction and some of them could quite appropriately celebrate their golden anniversary. The fair needs substantial, permanent buildings and of course will provide them as rapidly as circumstances permit. Its pressing requirements are for a large grand stand and a big building or buildings in which to house and judge hogs. An exposition hall of large dimensions and substantial architecture also is needed, and the management is anxious to secure additional grounds on which to construct a mile track. Legislative appropriations sufficient to defray the expense of erecting at least some of the needed buildings will be solicited the coming year. It is the intention to put up a large steel-framed grand stand and utilize only the best and most enduring materials in all other buildings. Covered concrete walks between the principal buildings also are contemplated. With its own funds and deserved aid from the State, the fair will rebuild itself in a few years. A permanent, fixed institution must have permanent equipment. This is what the Iowa State Fair now seeks. It can not afford to squander money on ephemeral wood creations. Brick of the best quality or high-class building stone for the foundations and walls, steel for the frames, concrete for the floors and tile for the roofs—these are twentieth century materials for modern State fair buildings, especially Iowa's.

Fake side shows and immoral so-called attractions were absent this year. The fair was on a higher plane than it has been for many years. Dignity and respectibility distinguished it.

Never until this year have the trolley cars and steam cars been able to convey with anything like proper dispatch and decency the crowds of people to and from the fair grounds. Two years ago the crush was brutal; last year the service was insufferable. But there was not much ground for complaint last week. Rock Island trains ran at frequent intervals between the city and the grounds, and the trolley car line was almost constantly blocked with cars, which were loaded with some regard for the comfort of the passengers. Attendants at each entrance to the car tried with fair success to close the gates when the seating and standing capacity was reached, and there was small excuse for anybody to have difficulty in going to or from the grounds. On the whole the transportation facilities were very good.

Some good night attractions were patronized by thousands of visitors during the week, and if the grand stand had been larger the probabilities are that the income from night admissions would have been an important item. It is proposed to improve and increase the nocturnal features and thus secure the maximum support from the city of Des Moines.

On Thursday afternoon the appearance of the celebrated pacer Dan Patch on the track packed the grand stand with people anxious to see this remarkable turf horse. It cost a big bunch of money to secure him, but the management believes that he was worth the price. Mr. M. W. Savage, the owner of Dan Patch, in a business way seems to be killing quite a number of birds with his famous steed.

# WHAT THE STATE FAIR MEANS TO THE FARMER.

*Alson Secor in Twentieth Century Farmer.*

In giving a brief review of the Iowa State Fair all detailed description of exhibits will necessarily be omitted. Just as well, anyway. The readers who saw the great fair need no such description, and those who did not attend the fair would not be benefited thereby.

It is our purpose to tell what the State fairs mean to the farmer, and if possible arouse enough interest in the nonattending readers that they may attend the next fair, or show the unobserving readers who did attend what they should see when they go.

The fair this year was a fitting celebration of its golden anniversary. The weather was perfect for such an event and the attendance was the very best. The exhibition as a whole was equal to any ever shown.

Iowa has finally become aroused and is making such permanent improvements on the grounds as befits the greatest agricultural State in the Union. Last year a fine new stock pavilion was dedicated, and this year close by stands a splendid new agricultural hall for the exhibition of agricultural, horticultural, floricultural and dairy products. New bricks walks are marked improvements.

The department made money this year and no doubt other improvements will grace the grounds another year. Larger amphitheater capacity is much needed. It is a shame to pay for a seat to see the races and other entertainments and be compelled to stand up all the afternoon. Hundreds of people would gladly sit in the amphitheater if they were sure they could sit after they entered. They prefer to stand in the hot sun and look over the track fence, or sit on the steps of nearby machine halls than pay for a seat in the shade and then stand in a jam.

The street car company handles the crowds nicely. They have also made some important improvements in the grounds. But so long as men exist they will be in a hurry and crowd like sheep. They stampede without cause. Nothing short of lightning speed in getting home when they once start suits the rushing American.

## STRANGE BUT TRUE.

'Tis strange but true that the railroads do not make any effort to handle the increased traffic of State fair week. They seem to feel that they do their duty when they reduce the rate for the great event. What does it matter to them if men, women and children stand in the aisle for hours after they are already excessively wearied by one or two days' tramping through the fair grounds? Farmers would not allow overcrowding of hog or cattle cars; they must put up with the overcrowded passenger coach, where health and strength of men and women are sacrificed to corporation greed. Thousands stay at home for that very reason.

But standing wedged in the aisle for hours in both going to and returning from the Iowa fair, we got there, saw the great show and finally landed safe at home, a wise and weary man.

Was it worth the strain—was it worth while? Yes. The live stock exhibit was fine. The cattle show best yet. The horse show was not up to par because of the horse show now on at St. Louis.

It is good for a man to go and see the magnificent specimens of live stock shown at a fair. He goes home with a determination to grade his scrubs up a little. It's a fine place to see what breeders have for sale and a good place to buy a thoroughbred to start with.

The display of fruits, grains and vegetables was good, though necessarily some specimens were immature because of the lateness of the season and the earliness of the fair. It's a good place to learn something. The farmer looks at the big fruit and asks the grower how he gets such big apples. He can't raise them—same kind, too. Well, he learns that the exhibitor takes care of his orchard. He learns why his orchard is a failure and goes home with a new inspiration.

### BEST DAIRY EXHIBIT EVER SHOWN.

The dairy display was the best ever shown. State Dairy Commissioner Wright said the State was getting aroused along dairy lines. A system of district buttermakers' conventions and dairymen's picnics is having its effect upon the quality and quantity of Iowa products. In spite of the fact that Iowa is a corn State, a great beef State, a State that does not show more than a handful of dairy cattle at the fair, ''Iowa, my Iowa!'' is the greatest butter State in the Union by far. Iowa, with its scrubby, beefy, dual purpose cows, can make butter just the same. What it will do when Mr. Wright and his able assistants gets the State thoroughly aroused along dairy lines can only be surmised.

Over in the old Agricultural hall the roosters were crowing in solos, duets and choruses, and the hens sang on the refrains. Why shouldn't they crow! Iowa is the greatest poultry state in the Union.

At the poultry show the farmers' wives have their say. They tell you what's what about chickens. They have that job on the farm. How they would praise a fine specimen, and how scornful was their comment upon a poor sample. Really, some were very poor samples. Scabby legs, pale combs, bleary eyes, lousy heads and general debility indicated that they should not be allowed in a show. But that's where the farmer has a chance to see what breeders have good, clean, healthy stock, and he should place his orders accordingly.

### THERE ARE LESSONS GALORE.

Down in the machinery quarters there were lessons galore. This is an age of machinery. The farmer no longer uses his brawn to any great extent There are implements, machines and contrivances whereby he may save time, labor and money in his work. But the farmer who stays away from the State Fair is not aware of the new and helpful things that await his purchase. Gasoline engines of many makes were there in great numbers. These engines are found on all up-to-date farms. The windmill swings idly on its bearings while the gasoline engine pumps water, grinds feed, etc. The merits of the different engines can be compared on the fair grounds. The traction gasoline engine has come to break the steam engine union. Lighter in weight, costing less at first cost and costing less to run it, doing away with the water and coal wagons, skilled engineer, and costing nothing while not actually working, the gasoline traction engine should interest the farmer as well as the thresherman. It stands the farmer well in hand to get posted on this subject. He may save money when he threshes.

There were many new things in gates and fences that it pays to investigate. Just because the heavy board gate has done well is no reeson why there is nothing better.

The farmer no longer has to shovel his grain out of his wagon by hand. What a backache it makes! He can get an elevator that will dump his load and put it into the bin or crib in no time, and fill both fuller than by hand shoveling. Maybe you didn't see those things. They were there.

Many men will cut corn with a binder this fall. As usual the stubs will stand about a foot high. These stubs will extract profanity from your lips as you stumble over them shocking corn. Those stubs will be there when you plow and cause trouble. But I saw an attachment at the fair that can be put on the binder and cuts those stubs close to the ground, so that they will be out of the way and sooner become rotted.

These are but hints of the many useful things the farmer can get a chance to investigate at the State fair.

### EVERYONE SEES THE RACES.

After all has been said concerning what the farmer may learn, what he ought to see at the fair, we must confess that there is but one thing that they all see when they go there. Everyone sees the races. What there is about it that so universally attracts is beyond our comprehension. The farmer does not raise race horses; he has no use for them on the farm. But somehow he wants to see the race. He will stand all day in a frying sun, stick his toes through the picket fence to catch a cross rail, lean over the pickets and yell himself hoarse to see the horse race. The great amphitheater, seating five thousand or six thousand people, was crowded with over eight thousand crazy specimens of humanity on Thursday, and every foot of space around the track, inside and out, was packed with some more of the same breed, just to see Dan Patch spin around the track. Each person could only see the horse for a few rods and the whole thing lasted but a few seconds, but that crowd stood all the afternoon to get sight of a horse that had a record. Can't understand it.

Besides the races by professional race horses, there were some interesting contests between fire company teams. Jack and Jack, supposed to be the fastest fire team, received their share of applause. Speed is put to good use when hitched to a fire wagon.

The acrobatic performances of the Dunbars and Japanese troupes were very entertaining. There were feats of skill and daring that made one's heart stand still. There were feats of strength and coolheadedness that were worth going to see. The farmer boy thinks he's pretty clever and strong, but after seeing those men do with ease what seemed impossible, he no doubt has less conceit. It shows what constant training can do for a man. If the farmer would take as much pride in doing a little better each year agriculture would make rapid advancement.

It is worth while to attend the State fair. Every farmer should make an effort to visit the one nearest to his home at least and every citizen of Iowa should support the Iowa State fair.

## LESSONS OF THE SHOW YARD.

*Breeders' Gazette.*

The writer met a friend at a great cattle show, who said: ''Come with me. I want you to see my herd. I am in hard luck. The judges discriminate against me. I have not made my expenses at this fair.'' A close inspection of the cattle revealed two facts; they were not in show condition and there was in each animal a fatal weakness of conformation, though the herd possessed great excellencies. ''I know the animals are not fat. I have a poor herdsman. I am willing to get a better herdsman, if you think best, and I am willing to get on the right side of the judge, if you think that will help me the next year'', was the suggestion.

Here was an old breeder and a good man, who needed some elementary training and instruction. I decided it would be best to speak with him frankly, for his future good. ''May I talk with you freely, and will you believe me sincere and not take offense?'' I asked. ''Certainly'', he replied. ''Well then you must not speak so of the judge. Judges are human and may make mistakes but it is rare they are partial to individuals. Indeed, I happen to know that judges quite often give their own consciences a twinge by awarding prizes where they do not properly belong rather than leave some poor exhibitor lonely in entire defeat. The number of our judges who are to be bought is very small indeed. I could not have given your cattle more than they received, and here is the weak place'', and I put my hand on a marked deficiency in conformation.

''First of all get a better sire; get one that will correct this weakness in his offspring; get a good one. Stand not on economy or pride or anything else but hunt high and low till you have found one that is strong where you are weak. Then get two females as good as he is. Then you need not discard your present herd but you will build it up while you are creating a new family to add strength to it.''

''But I do not like to do that now; this is my thirtieth year as a breeder.''

''It is indeed the end of your thirtieth year, but remember it is also the beginning of another thirty years, of another fifty years, of another hundred years of effort. That is the right use of the golden present, to consider it not as the end of all but as the beginning of a better era. You and your boys may better date from today the time when you began to breed prize winners than to date it as the time when you gave up, defeated, after thirty years of struggle. This is the first time you have met the best herds? Very well, you have learned far more than it has cost you to come here. Go home, somewhat humble, perhaps, but at any rate far stronger than ever before as you now have the knowledge that will make you succeed in the future.''

The old breeder called his boy. ''See here, John, here is where our cattle are weak, here is what knocked us out; we have not realized this defect or classed it as serious, I think we will find a sire that will correct this. I have been to school here. Good day; I won't forget; this is the beginning, not the end.'' And the old man took a fresh pull at his pipe and led his old bull to water with a twinkle in his eye and a look of firm resolve about his weatherbeaten face that told of something else than defeat.

## HARVEST THANKSGIVING SERMON.

*Delivered by Dr. Frank W. Gunsaulus, in the Central Church, Held in the Auditorium Hall, Chicago, Illinois, on Sunday October 30, 1904, A. M.*

### ''A SHOCK OF CORN, FULLY RIPE.''

You have the text of this morning already before you. (Indicating the display of harvest products arranged on the platform, which Dr. Gunsaulus, in a prelude to his sermon, had explained had been sent from the Iowa State College, Division of Agriculture, Ames, Iowa.) I suppose I would better select, as appropriate to the guidance of our thought, those great and venerable words of Job, who was a farmer, and drew many of the symbols of his spiritual life from the fields, and who saw that this is not a duo-verse—part spiritual and part natural, but a universe, a uni-verse, and who left us this immortal phrase, ''A shock of corn, fully ripe.''

It is the lesson of ripeness that we must learn this morning. Now there are two attitudes which the mind of man takes with respect to the autumn. One attitude may be illustrated in the story that there was once a little girl, with rosy cheeks and golden hair, who climbed up upon her grandfather's lap and began to play with the few remaining hairs at the side of his head. And as the little girl stroked his head, thinking as she did so of her Whitcomb Riley poem, she said, ''Grandfather, the frost is on the pumpkins.''

Now, to illustrate the other, I go away from America, with its broad and and rich plantations, into the cloistered shades of English scholarship, and I walk with the most thoughtful man who sings today, William Watson. Now he sings about the "Autumn" in this wise:

"Thou burden of all songs the earth hath sung,
Thou retrospect in time's reverted eyes,
Thou metaphor of everything that dies,
That dies ill-starred, or dies beloved and young,
And therefore blest and wise.
O be less beautiful, or be less brief,
Thou tragic splendour, strange, and full of fear,
In vain her pageant shall the summer rear?
At thy mute signal, leaf by golden leaf,
Crumbles the gorgeous year."

This is a great verse, but here is a deeper toned melody:

"For me, to dreams resigned, there come and go,
'Twixt mountains draped, and hooded night and morn,
Elusive notes in Wandering wafture borne,
From undiscoverable lips that blow
An immaterial horn;
And spectral seem thy winter-boding trees,
Thy ruinous bowers and drifted foliage wet—
O Past and Future in sad bridal met,
O voice of everything that perishes,
And soul of all regret."

This is more than fine writing. Yet is it the entire truth? There is another rhyme, which come to us out of the very respectable past, which reads:

"The melancholy days have come,
The saddest of the year."

Now, my friends, which attitude of life is yours? The man who is singing, "The melancholy days have come, the saddest of the year," will think it very irreverent, indeed, in us, that on this Sunday morning I should have told you about a little girl who climed upon her grandfather's lap, and, looking at his gray hairs, remarked, "The frost is on the pumpkins." But the little girl is a greater poetess than Adelaide Proctor; greater even than William Watson, and a fine interpreter of the Hoozier singer who sang, "The frost is on the pumpkins, the fodder's in the shock."

"Melancholy days have come?" No, not, "The melancholy days have come," but "The golden days have come." The days of achievement have come; the days of sweet, soft, golden haze have come; the days in which God liberally fills the year with treasure from the golden streets of the New Jerusalem. Days are here in which the sunset is a robe from the eternal, containing all of the rich colors that He may find in His large and spacious universe. Days are come in which the old earth is throbbing with that music which comes from the unity of all things, and the purpose of everything. Days are these, of garnering, and of corn in the shock. Days are these, in which we are able to understand and learn more of the Peter with whom we have been dealing, on these recent Sundays. Look at him here. Take him here (lifting an ear of corn from the platform) from one of these shocks, and find him growing as an ear on the stalk of corn. As we saw last Sunday, take away the Simon. The Simon must come away from the

Peter; the Simon of stubbornness; the Simon of impetuosity; the Simon of self; the Simon of hot-headedness and self-confidence. It must leave for us Peter. (Exhibiting the husked corn.) We see, now, how it is that Jesus intimated to this man, that he was in a milky but promising condition. There were days when no man could tell the difference between Peter's prejudice and Peter's principle; then the husk was around him. The husk was of so much importance, and there was so much of husk, that He could not tell the difference between his stubbornness, which was like a crowbar, and the coming spinal column, full of nerve centers, close in their relationship to the brain. We can come to that time, now, and hear Jesus say: "Thou art Simon; thou art a very pulpy, but a very promising Simon. I will make of thee, Peter. Thou shalt be a rock-man."

Those of us who are over forty years of age can talk in this way better than we could at nineteen or twenty. It never occurred to me when I began to preach at nineteen years of age, that I would find, some day, a sermon on autumn. My sermons were all on spring, then. I dealt with many green things, philosophical and physical. But I knew then that I found myself out of the reach of certain experiences that were the experiences of men and women in my congregation. Well, autumn is here, and it is beautiful. They are not melancholy days, unless they are lived in a melancholy fashion.

Oh, men of forty, oh, women of fifty—that is an unfortunate break I am sure (laughter)—oh, men of fifty, and women of forty, if you have lived as you ought to have lived there are no melancholy days, behind or before you. Are these melancholy things? (Pointing to the display on the platform.) Is it not a fact that here is the justification of all the experiences that lie back there, in the early growing days, when you didn't know whether to plant corn or not; in the early days when the ground was too wet to plow; in the early days when the ground was too hard to cultivate, and in those days after the corn had come up, and the weeds were growing with all their might, as they always do grow in rich soil? Is it not a glad duty for us all, today, to stand in the presence of an ear of corn, and just ask ourselves—we who are fifty years of age, and more than that, when our mind turns towards the autumn of life, does it turn in the direction of melancholy, or in the direction of golden achievement, and gracious justification of all the enterprises of life?

But I would not have you mistake me, this morning, my young friends, a thousand of you, here. Do not think that you must suddenly take an intellectual leap, and, by some tremendous effort, bolt over into the fifty's in order that you can appreciate the autumn. Some of the greatest joys in life are the splendid anticipations of youth. But they are anticipations that are bound to be richer and richer, as days come and go if we live nobly. And it is because of that anticipation, because of the imagination, because of the doorways that open into the future, because of the sublime faith that God will keep His word, and that God will stay with us until we come to be what He wants us to be—it is this which makes the glory of youth.

I think one of the greatest nuisances in the world is an old person who is trying to seem young; it is an old man who desires to be simple, and accomplish the task which is unsuited to his age. That word "simplicity" is often a very misleading word. But, worst of all, is the young person, in the spring time of life, when all the sap is running, with whom all the forces of life are, or ought to be, in love; with whom there are wooings and weedings in the air, and with whom all the energies of life are thrilling with the great eternity, who mechanically puts on the autumn face of November, suddenly adopts tearfulness, like a fall of rain; and woefully seeks to realize that kind of piety that goes with a long face. My dear friends, all these are perverse; all are based on misconceptions about life. Your young man has no more business to be an old man, in order that he shall seem satisfactory to a board of deacons, than an old man has to be a young man, in order that he shall satisfy a prevailing impression, or become center rush in the football eleven. Nature detests mechanics of this kind.

There is a worrying incongruity in any man's life who does not understand the law that all human life is sacred. There never was a wasted moment in the life even of this common product. (Indicating a pumpkin.) Not from the moment when it was a seed, until today, when "it holds within itself, in gold, the whole ideal of the dome of St. Peter's." It is a great thing in nature, which has been arguing the future of St. Peter's and St. Paul's domes. There never was a moment in its history which was not of profund importance to it. The value of the seed lay in the fact that, some day, it would be this sphere of gold; and the glory of this sphere of gold lies in the fact that out of that seed it has arisen into the fullness of its prophecy. It has accomplished itself. Here it is, in all its beauty, and in all its strength. Here are object lessons to you, today—there are two hundred and fifty pumpkins here, this morning—all of them preaching an autumn sermon, because each has realized itself out of a little seed. Every moment of its life has been emptying itself into every other moment, and making that quick, to make the best of the world and of itself. No! The glory of a young man is his strength, and the beauty of and old man is his gray head.

There was a time when good people thought it decorous to use things in order to keep from any appearance of having gray hairs. That was a time when it was very embarrassing to read this text in certain congregations. Here is the Word of God today. Here is the good news. It is a gospel, in the first place, of growth, so certain that it begins precisely where all growth begins; and it has exactly the same rules of growth that shall come to you, and to me, in the development of all our life.

I wish this morning that with this ear of corn, and with these stalks, and with these leaves, right here, in your very presence, I could show you, in the first place, that the greatest products of life, the noblest results of growth, have nothing whatever to do with what the Pharisees and Sadducees call "consistency." And yet, inside of all inconsistency of life, with all consistency, is that divine power of achieving the end of growth. Along with inconsistency, so to speak, there comes glorious consistency, triumphant over all.

Suppose, today, we take another of these ears of corn; here upon this shock, and we begin to say, "this thing, now, must be consistent from the very beginning to end." Then you must husk this corn, and take a single grain of it, and keep it. Now, is this a hopeful consistency? Then there shall be no growth. Do not be afraid of growth, whatever it costs you. "But, I must be consistent; and this grain of corn must be also," you say. "There it is. We will put it in a box, a gold box," and there you do put it, where it can not accomplish any of its prophecy. Consistency is saved? No. Try again, on higher lines. Look at that other seed. It is put into the earth; and, bye and bye, the rain and sun get into conspiracy with the seed; and and bye and bye that little seed has an experience of pain.

All growth comes by pain. All travail-pains are hints of unfolding plans. And out of them comes children—ideas, and harvests. Don't be afraid of mental pain. Don't be afraid of unpleasant changes in your mind. Don't be afraid when some parchment-faced deacon stands at your side and tells you about what the Fathers thought. Respect both past and future. Don't be afraid to realize that they were Fathers, and realize the fact that before them there were Fathers also, and that these were content with that which contented their Fathers before them. Let the seed fall into the ground, and it will take root.

We do not believe that the Bible, by any manner of means, invented a dream, when it presents the Master saying, "except a seed of corn is thrown into the ground and it dies it abideth alone. But if it die—" then comes the miracle of life from death. No, the Bible is not a book of newly invented phrases, which God gave to the prophets only. These truths were made manifest in the world with Jesus Christ. But Jesus did not create them; He did not even invent immortality. He brought life and immortality to light. Here is the inherent law: Unless this seed dies, and rots in the ground, it abideth alone. But once let it die, then it bringeth forth. Oh, let us trust this gospel of life.

Once more: Here is the man who put his seed into the gold box, to keep it consistent. And he says: "This seed does not behave well. A seed should not act that way. It is in a gold box, and it has not changed. It is all a loss—a loss to the grain, to the sun, the rain, and all the universe." Do not treat your inner life that way. Welcome all true transformations of growth. You know that this or that man will think on certain lines ten years from now just because he thought on those same lines ten years ago. His ancestors before him thought so, and he is afraid to grow. He thinks he is faithful to truth. But he is as essentially faithless as a farmer would be who refuses to plant his corn seed. This often occurs in our political parties, and in some universities. What is the difference between this grain of corn, apparently guarded, in the gold box, and this one flung into the earth? This one dropped into the earth is soon outwardly breaking up, and sending up a little green shoot, and extending its roots down into the ground; which all appears to be mechanically inconsistent with the outer look of the grain of corn itself, which is dead. And the little shoot is finding its way out into the light, and back into the dark, and out into the light, and back into the dark, and into fuller light, as it lives from earth into the heaven where things ripen. That is the story of the soul. That is the story of progress.

Jesus wished this, and said as much to His disciples: "I leave you in the world." Yet he wished them to be not *of* the world. And He said, "I pray for you. I leave you in the world. I know you are better than the world, and better than the soil into which I put you. But you will not amount to anything unless I leave you in the world. If I take you out of the world, and have matters mechanically arranged about you in a pleasant manner, and if you preserve only your poor consistency, enough, it may be easy enough; but, there's no future for the Kingdom in this; if you are going to amount to anything you must be rooted in this world, and transform and assimilate the world material into the life of humanity, as I have done."

There is no gospel of asceticism for the corn seed. There is no hope in taking the corn away from all temptation and danger, and keeping it wrapped up. Nothing of that sort is in God's plan. There are no monasteries in nature. God puts His seed into the world—*in* the world, but not *of* the world. He would have us get out of the world just what this seed gets out of the soil—all that is inspiring to the soul, or stimulating the powers of the moral being in its development.

Oh, say you, "I am a boy in school." I know you. You are a Christian boy. You came to the city this fall. There you stand, with the other fellows, who are no better than you are; and you are rightly afraid of seeming to be a spiritual dandy. They will soon find out whether or not there is any man in you. They will know whether they are dealing with a realty, or a sham. You can not afford to walk through your school holding a Psalm book in one hand of your piety, and holding a scientific book in the other hand of your piety. Don't divide yourself in that way. Trust yourself to place your life in this world. You must root yourself here. You must get into human interests, and get them into you. You would better join every society that will make a man of you. Get into relationship with your fellows. But, if you are a real Christian, oh! how they will respect you! When they see you taking all that there is in the world, and in college life—all that is inspiring, and upbuilding, and uplifting—living in and yet growing out of the soil in which you are; growing more manly because you are more Godly, Oh! how surely they will rally round you; for all men love a true man.

Behold this little seed again. By and by, there will begin to grow out of this seed long streamers—those banners, those flags of nature-triumph in the corn. But it is a victory only by sacrifice of the little to the large, the lower to the higher—all form, to life. I know that it is a risky business, this affair of growth. But if you oppose growth you oppose life.

Why, my friends, there is no more insult to the human mind as the insult offered by any hard and fast church organization, and those that conduct it on the principle that men shall not grow, and their ministers shall not grow. The church is not a place where saints are discovered, and placed side by side in their original state, each in a little niche, where wise ecclesiastics may expect them to stay forever. It is a place for the aches and the perils of growth alongside of the guidance, and in the love of God. Character-growth is like growth in belief. We come out of the cold ground in obedience to the sunshine; but it means the bursting of some shell of our smaller life; it means rain of tears; it means the throb of a vitality which will root itself downward and open itself upward as the winds blow. It is impossible to get a shock of corn fully ripe without all this expenditure.

Don't be afraid of a closer examination. Here is the grain. What a character must be there—rooting, germinating, growing, harvesting. Oh, how beautiful, and how divinely consistent; for, at last, it is corn—golden consistency out of months of inconsistency. It began in corn and ends in corn.

All the fine liberties of life are inside the law of life. All the victories worth having are transformations inside a changeless purpose of God.

Long ago there came to a household, over yonder, many many years ago a little child. Oh, how beautiful was that little child. They called the little child Asa—Asa Gray. He went through his studies; he developed, and became a correspondent of Charles Darwin. He became one of the greatest botanists in the world. Ideas swept through his brain as the wind sweeps through the flagdays of the corn. He developed his entire self more nearly than any scientist I ever knew. I saw Asa Gray in his old age. What was he? Well, he begin at the first a little child, and, at the last he was a little child. Though all years of glory had fallen upon him, and though he stood in the forefront of the scientists of our time, here he was—God's little child. Through how many obvious inconsistencies did there move this childhood of his unto God, toward a consistent victory.

At the last, at the last, there shall be ears of corn. They will reward you freely, and without any sort of a reproach. Ever graciously, but how, how simply will life be its own reward.

Say then to your Father, ''Here God; here there is all there is of me. I put myself into Your world. I put myself where the ambitions, and the desires, which seem to be simply mine, shall die; and I put myself in league with the sun; I put myself in league with the rain; I put myself in the solitude and the darkness of that experience by which I die out of myself. My human dies; my divine self belongs to Thee. Here, God, here I am, I will root myself in this world, and open myself out in my growth upward and heavenward.''

As sure as man, the seed, shall die, he shall bring forth harvests. God will furnish the sunshine; God will furnish rain; God will furnish all the divine outpourings from above; and the soul will live, because he is rooted, and is true to this world; and because of the fact that he lives upward, and takes his resources and experiences from above.

Oh, my friends, do not yearn for heaven, except as your yearnings for heaven are the result of your faithfulness to the glorious earth in which we live.

Nature is God's story of how he works with souls. For example, a man came into the car the other day, and brought in some oak roots; and he showed the branch of an oak tree. And he said, '' Sir, do you know that inside the terminal and lateral buds of this oak there are clearly defined rudiments of leaves for next summer? '' And he showed me the oak branch, and I saw the rudiments of leaves for next summer. That oak tree will begin just where it left off. And that beginning will be the harvest of a large impulse to which that oak tree has been entirely true through all the years of its past. We must learn God's ways of leading us from the life here to the life yonder. We have rudiments of eternal being.

What is all this here, my friends? This is the result of scientific farming. Those people out there in Iowa, those college men at Ames who sent these things to us, and have thus offered us the study of the corn, have gone into this matter of the corn as thoroughly as you study any other matter of psychology or anything in the history of the human soul. This is the great study of America—agriculture. Why, if we had as much sense, and exercised as much care as to the marriage of people and the production of a fine humanity as these farmers have and exercise about the producing of finer corn, we would have a superior race of people in the next century. There (indicating) happens to be an ear in which all the lines are straight. Here (indicating) is an ear which is ripe; and there (indicating) is an ear which is not entirely ripe. Notice how deep is the grain. Some men are largely cob. This (indicating) was bred for grain. See how nearly the cob is hidden? There is just enough of it to carry the grains. That is enough, in man, or corn. This stalk (indicating) produces a great many ears, and over there (indicating) are stalks that are more stalk than ears. These things have come through long, long years of trustful regard to laws of progress.

You go into the Agricultural Department, at Washington, and you will realize this: That the greatest engineer of modern times is not the mechanical engineer; not even the electrical engineer. He is the chemical engineer; he is the bacteriological engineer; he is the biological engineer. The fact is the American farmer is going to be the greatest of engineers. My friends, in this college, are trained engineers and they are going to get to the potencies of the soil beneath the immediately perceived soil, which anybody can farm if he will.

The other day one of these chemical engineers said, ''I can get more gold out of the dump of this mine than my predecessor got out of the mine itself.'' The farmer is the man who is going to realize, that, beneath the surface of things there are untold riches, and invitations for him to apply science to their revelation.

My dear friends, shall the Church, shall spiritual leaders, stand here and believe the hopeless doctrine that we have tolerated in regard to the spiritual education of our children? Suppose there had been given as much attention to the spiritual education of our young people, our little ones, as has been given to the development and education of this corn. "Oh," you say, "it is every day corn; it is very pretty, but it is just corn." No, no. I tell you that this is native corn, converted and sanctified. I will go further—a religious secret is here—it is corn with a cross in it. How did this fine corn come to be thus perfect and beautiful? Just as once a man down in Concord took the grape, and crossed it, and crossed it, again and again; until all the sour got crossed out of it, and all of the sweet got crossed into it; so men have crossed the corn, and crossed it again. The grape grew large; it grew larger in its finer self, and smaller in its coarser self. And yet he crossed it, and crossed it, and crossed it, while he fed and fertilized it, until it lost its uneducated and disobedient Adam, and became, as it were, a saved thing. If it was not Christianized it was at least converted. Now, this is converted corn.

Here is a foreign tree, that blazes with such dazzling beauty. How are you going to get the blaze out of it? You must cross it. You must saw off a limb. You must send down into the stem of the limb—grafting there—not putting in that kind of ''graft'' which we hear so much about, but a graft that has life in it. I have seen it done a hundred times in my boyhood. That graft settles itself into the old, bleeding, split, old-fashioned limb, and there comes out a newfashioned fruit. You can not get rid of this doctrine of the new life by conversion from above.

Somebody wrote me a letter the other day, and said, ''I don't like those old hymns. I go to a place which suits me, because they have changed most of the hymns.'' Yes, I know; they have taken liberties with the verses. I would no more take liberties with another man's poetry than I would take liberties with God's sunshine. He said, ''We do not sing about God's atoning grace at our place, because we don't know that we believe in any God, as the hymn writer did; and we don't know if we believe in Jesus as the Christ. We can not sing, 'There is a fountain filled with blood,' We can not sing 'Rock of ages.' The fact is that we have not very much that we can sing.'' That is a farmer refusing to make his soul sing of the conversion of native maize to this kind of corn.

God pity the church where song is not the triumphant voice of the living faith. The great day of the church of Germany came when Luther taught it to sing. The great day of the church in England came when Wesley taught it to sing. But it is a poor song of progress without converting power.

The fact is that growth in grace, or gracefulness, is a thing of grace. It is something that comes from the outside and above, and appeals to the inside until it is changed. Don't be afraid of getting too much religion by singing "Saved by Grace." For that is the way God saves all men. It is not of yourself. Oh, no. It is the power of the living God.

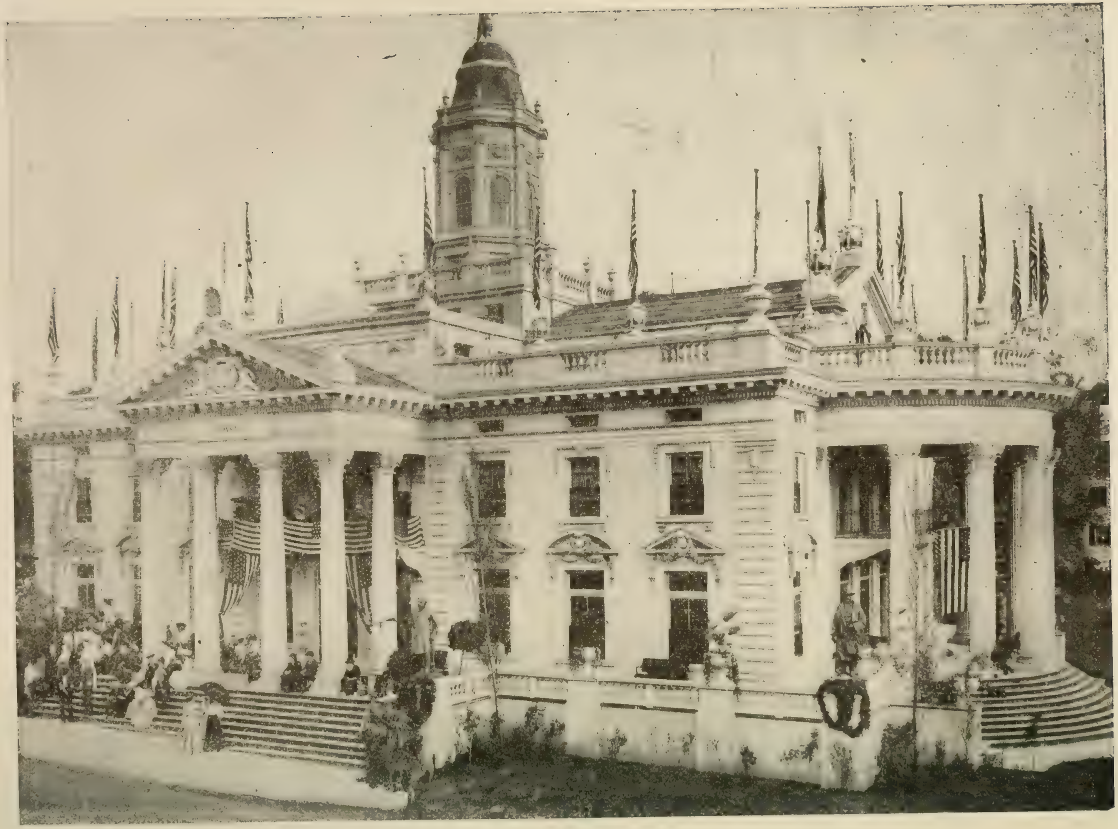
Remember the law of correspondence in all this. Ah, there is an illustration. (At this point in the sermon a pumpkin slipped from its place and fell with a thud to the platform.) That is an illustration. It is exactly that. There was something there that was out of, had lost, its true correspondence with its surroundings. Let us stay with that pumpkin for a moment. Suppose you blot the sun out of the universe. ''Oh,'' you say, ''the sun is nothing much but a dream man has made of the great mystery.'' Well, a farmer objects. He says that to him the sun is something which works from above upon everything. It goes through all things, so that nothing has a separate existence of itself. Suppose you take away the sun, and try to rear a pumpkin. The result would be unworthy the dream of a pumpkin, and far less worthy of the farmer. The fact is, the pumpkin must grow under the influence of the sun. It is a testimonial to the existence and power of the sun. It is largely the result of the sunlight, as it lies there on the warm ground. How many experiences it has had with the sun! How it welcomed the sun, as it came streaming down! And it grew, and grew, by a religion of experience in which the sun was God.

Dear friends, here today not for the first time, to hear the message of the harvest, here is the gospel of experience; here is the gospel of life. Can not you see, today, your true life realizes the law of all or part of all this? All this is within you. The Sun of Righteousness is all about you, the great God himself. Feed on Him. Love Him. Bare your soul with Him; let his experiences come into your experiences. Do not be afraid of this gospel; it is so natural, and it is so inevitable. You are looking for a burning bush, are you? Go out into the woods and see the maples, and all the young oak trees. Each is the burning bush. They are just as much of God's Gospel as this Bible is. But, in it all, my friends, be sure that you never know what all the meaning of the autumn is until you realize it in the gospels that are to come later—in the winter of life, toward which we are all looking. It is in winter, where the High Priest stands, with his long white beard, at the door, and asks of you and me, ' ' Child, what have you to give? What fruit, what grains, what ruddy wines, white milk or golden honey? '' What have you gained by living? We must test what we have in the wintry days of age.

Once more, Oh, men of Chicago, Oh, women of Chicago; tell me, tell me why it is so many of us go wrong in the autumn. Tell me why it is that the American, of all men, is likely to go to pieces in his harvest time. He goes through the spring with enthusiasm. He has his ambition, his active life, and his home. He is safer then. More men fail after fifty to hold up the moral standard, to keep themselves pure and good, than you dream of. More women go to destruction after that age, proportionately, than you have counted. Why is this? I think that my friend, back yonder in the spring of life, and all through the summer, was busy. Now he has nothing to do. After he gets through the office he goes to the clubhouse. He is self-confident. Now he has nothing to do, but expatiate, and taste a few things he had not investigated before. He has wanted to get wealthy. The family paid for it. ''Oh,'' the poor wife and children have said, ''It will be better by and by. We are making money now. He will not be so nervous by and by.'' He was just business, business, business. He goes from the office to the home, and from the home to the office. But, oh, a little later on, when the time came for the mellow ripening, for the transforming of all sours into sweets, something about him startles you. You get what appears to be a ripe apple, and when you get into it, you find a worm. And then you see that his ripeness was all false. Oh, there may be many of us that are ''rotten before we are ripe.'' Many of us there may be who have been so untrue to the great essentials and ideals of growth that at forty-five or fifty we have nothing to ripen us slowly, surely. The worm is at the core.

Thoughtful men know that there is no time in life when a man is so easily, or can be so easily lied to and flattered by some adventurous woman, or by some designing man, as he can be when he gets to the period of leisure; when he has nothing to do but study the stock market. The house of him is vacant. One devil has been turned out, and seven other devils have taken possession of him. No, my friends, I say keep on working at something; keep yourself employed. I don't mean that you should work like a slave. Anything but that.

Have you no loved art? Have you life in any of your books? It might be an awful revelation here, today, if the business men in this audience were to kindly tell us what they have added to their stores of history, romance, and poetry, during the years. Some old gray books are on your shelf that were given to you when you were married. You have not added to these old sources of inspiration. Learn to live more deeply. It is when a man has made his fortune that he is in the greatest danger. It is when a man has made his fortune, when he thinks he is the master of the world, it is then that he most of all needs God, that he needs something that will take him out of himself. Let that man be thankful who has a passion for art, music, literature, especially for making this a better world as he grows older. Let each aspire at length to be a shock of corn, ''fully ripe.''



Iowa Building at the Louisiana Purchase Exposition, St. Louis, Mo., 1904.

# PART VIII.

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## AWARDS TO IOWA EXHIBITS AT THE LOUISIANA PURCHASE EXPOSITION.[*]

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BY F. R. CONAWAY, SECRETARY OF THE IOWA COMMISSION TO THE EXPOSITION.

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### GROUP 84.

Manchester, Delaware County, Iowa........................................Grand prize.

L. G. Clute, collective grains and grasses.

Miles, Jackson County, Iowa........................................ Grand prize.

Iowa Commission, collection of grasses, grains, corn.

Collective Exhibit of State........................................Grand prize.

Iowa State exhibit, Iowa State collective exhibit of corn, artistic cereal decorations on wall, design and fine quality of grains and grasses.

The following is a list of the individual corn growers furnishing corn in the exhibit in the Iowa booth:

GRAND PRIZE.

Frank Dean, Whiting.
Newell Dailey, Whiting.
T. G. Dugdale, Onawa.
Albert Larsen, Onawa.
Lee Jividen, Onawa.
Carlton Volgamore, Soldier.
P. H. Naden, Onawa.
Earl Rogers, Onawa.
J. P. Smith, Onawa.
Will Cresswell, Onawa.
O. H. Utterback, Onawa.
Isadore Uhl, Mapleton.
J. G. Iddings, Mapleton.
C. N. Brook, Mapleton.
F. M. Wooster, Mapleton.
J. R. Jepson, Turin.
E. E. Morse, Turin.
Eric Carlson, Turin.
Chris Peterson, Turin.
Arthur Hunt, Turin.
Chas. Clemmenson, Turin.
Louis Cambarrus, Soldier.
Marian Nelson, Soldier.
George Warsop, Onawa.

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[*] The awards in the departments of mines and metallurgy and in the manufactures representing the State of Iowa are not given owing to compilation of same not being completed at time of going to press.

John N. Aiken, Ames.
H. E. Brown, Sargents Bluff.
H. H. Birkland, Rowland.
C. E. Bucknan, Castalia.
Waldo Belding, Bagley.
W. D. Bowers, Whiting.
Grant Chapman, Bagley.
L. G. Clute, Manchester.
J. E. Campbell, Ames.
W. R. Coon, Ames.
Clarence Chapman, Washta.
Chas. Cook, Bagley.
W. N. Darke, Decorah.
W. P. Dawson, Quimby,
O. J. Easton, Whiting.
Geo. S. Forest, Miles.
E. C. Forest, Miles.
F. A. Frevert, Odebolt.
E. F. Frevert, Odebolt.
Bert H. Neal, Mt. Vernon.
D. B. Nims, Emerson.
J. W. Nims, Emerson.
Fred Nims, Emerson.
Henry Nims, Emerson.
J. L. Orr, Neola.
O. Osborn, Maxwell.
C. G. Oliver, Onawa.
D. L. Pascal, DeWitt.
John Rexworth, Wilton Junction.
Jesse Rogers, Bagley.
M. H. Russell, Bagley.
A. T. Smith, Castalia.
D. D. Stutt, Clarinda.
Chas. Shaw, Hastings.
John Sundberg, Whiting.
Paul C. Taft, Panora.
Asa Turner, Maxwell.
Harry Turner, Maxwell.
Frank Loyd, Maxwell.
Meade Sanford, Monticello.
Fred McCulloch, Hartwick.
Fred Wergus, National.
Henry George, West Union.
L. C. Hutchinson, West Branch.
Robt. J. Paul, Gilman.
Perry Livingwood, Castana.
J. A. Bliss, Diagonal.
Homer C. Cadwell, Logan.
Ed. C. Neinber, Durant.
W. E. Aiken, Decorah.
C. R. Taylor, Hamburg.
A. M. Avery, Mason City.
H. J. Ross, Farragut.
H. H. Woodrow, Melvern.
Chas. Reubsam, Ainsworth.
Geo. P. Hardwick, Britt.
G. C. Chandler, Fairfield.
C. J. Fawcett, Springdale.
E. C. Plummer, Altoona.
John Sheedy, Weller.
A. T. Zimmerman, Washta.
D. W. Owen, Castana.
C. E. Frevert, Odebolt.
L. W. Forman, West Branch.
Victor N. Felter, Washta.
Verne C. Felter, Washta.
Guy C. Gleason, Mechanicsville.
Alonzo Green, Clarinda.
Alonzo Harvey, Ossian.
Hess Hethershaw, Des Moines.
W. Herron, Bagley.
A. F. Holmes, Bagley.
D. M. Johnston, Storm Lake.
J. M. Maxwell, Crawfordsville.
George A. Cross, Avoca.
J. M. Stewart, Ainsworth.
C. F. Mitchell, Shenandoah.
N. Drake, Freeport.
Thomas Thompson, Sciola.
Fred Hethershaw, Des Moines.
W. J. Farrell, Farragut.
F. M. Danner, Osceola.
F. J. Gestil, Delhi.
B. C. Andrews, Ollie.
J. H. Epley, Shell Rock.
Miller Nelson, Goldfield.
A. L. Plummer, Altoona.
Warren Winegar, Castana.
George Mason, Des Moines.
Anton Nelson, Goldfield.
John Nachtman, Earlville.
John Crayle, Greeley.
Frank Brown, Shannon City.
Ben N. Stuedeman, Lyons.
Harry Easton, Rhodes.
Leonard Newton, Newburg.
Hans Hanson, Goldfield.
Ray Owen, Bonair.
Wray Hallett, Forest City.
Earl Iddings, Mapleton.
F. W. Carritt, Soldier.
Oscar Hall, Whiting.
Burrell Jividen, Onawa.
M. C. Schackell, Onawa.
Leonard Gray, Mapleton.
Alfred Gray, Mapleton.
G. H. Merritt, Whiting.
George Merritt, Whiting.
A. Hanson, Turin.
Chris Peterson, Turin.
F. S. Moore, Turin.
Charles Holden, Soldier.
J. M. Carritt, Soldier.
J. F. Volgamore, Soldier.
John Bells, Moorhead.
A. E. Smith, Rodney.
Elmer Bennett, Ticonic.
Ed Sawyer, Sargent's Bluff.
Charles R. Forest, Miles.
Chas. F. Steen, West Liberty.
Earl Wheatcraft, Colfax.
Fred T. Danskin, Marengo.
Archie D. Nims, Emerson.
Gilbert Tracey, Nashua.

Melvin Hurd, Burt.
Glen D. Gaskill Corwith.
Forest Claxton, Randalia.
George L. Jolliffe, Rolfe.
C. A. Clute, Manchester.
Chas. Hanna, Manchester.
Samuel Way, Greeley.
Samuel Wetterlen, Manchester.
Harry Culbertson, Manchester.
Lewis Kuehnlie, Greeley.
Ray Rodibaugh, Libertyville.
Elmer A. Tompkins, Dakota City.
Bruce Carson, Thompson.
Vasco Boulden, Onawa.
Hans Nelson, Turin.

The following individual exhibitors received awards on corn:

### GOLD MEDALS.

W. P. Coon, Ames.
Geo. S. Forest, Miles.
D. B. Nims, Emerson.
Henry Nims, Emmerson.
Leonard Newton, Newton.
Asa Turner, Maxwell.
E. C. Forest, Miles.
F. J. Gestel, Delhi.
Fred Nims, Emerson.
J. M. Maxwell, Crawfordsville.
Chas. Shaw, Emerson.

### GOLD MEDAL ON BARLEY.

Fred Hethershaw, of Des Moines.

### SILVER MEDALS.

J. E. Campbell, Ames, corn.
Hess Hethershaw, Des Moines, corn.
J. W. Nims, Emerson, corn.
J. M. Stewart, Ainsworth, corn.
Thos. Thompson, Sciola, corn.
Fred Hethershaw, Des Moines, flax seed and corn.
Wm. Hilker, Des Moines, corn
A. L. Plummer, Altoona, grasses—corn.

Individual exhibitors in corn:

### BRONZE MEDALS.

Samuel Albright, Green county.
H. E. Brown, Sargents Bluff.
F. M. Danner, Osceola
W. F. Farrel, Emerson.
Henry George, West Union.
Chas. Holden, Castana.
Perry Livingwood, Castana.
E. H. Northop, Boone.
John Sheedy, Castana.
Chas. F. Steen, Muscatine County.
Warren Winnegar, Turin.
H. H. Woodrow, Malvern.
W. D. Bowers, Whiting.
C. G. Chandler, Fairfield.
O. J. Easton, Whiting.
Verne M. Felter, Washta.
Geo. A. Gross, Council Bluffs.
H. R. Knight, Coin.
W. H. Lovill, Onawa.
C. G. Oliver, Onawa.
Earl G. Smith, Webster City.
John Sundberg, Whiting.
Harvey Turner, Sioux City.

Counties and individuals won prizes as follows:

Des Moines county, bronze.
Johnson county, bronze.
Polk county, gold.
Mills county, silver.
Iowa Agricultural college, Ames, silver.
Ayres, H. F., Wilton Junction, silver.
Blodgett, C. G., Mt. Pleasant, bronze.
Bordner, W. E., Onawa, bronze.
Brownson, Dr. J. O., Monona, silver.
Clemons, L. A., Storm Lake, bronze.
Clute, L. G., Manchester, silver.
Deganhard, John, Iowa City, bronze.
Dickens, O. C., Hedrick, bronze.
Dyer, C. H., Glenwood, bronze.
Eacrett, E. E., Strahan, silver.
Evans, E. H., Onawa, silver.
Everingham, A., Glenwood, silver.
Finch, C. C., Knoxville, silver.
Flynn, L. E., Runnells, bronze.
Forster, John, Albia, bronze.
Garrett, A. L., Altoona, bronze.
Garrett, C. O., Hastie, gold.

Garrett, Charles, Mitchellville, silver.
Gaylord, Edson, Nora Springs, bronze.
Graham, M. J., Adel, silver.
Harrington, F. O., Williamsburg, gold.
Hiatt, S. L., Peru, bronze.
Haviland, W. C., Fort Dodge, silver.
Horn, H. N., Hillsboro, silver.
Howell, E., Des Moines, silver.
Ivins, G. A., Iowa Falls, silver.
Jackson, J. P., Glenwood, bronze.
Kerns, Alexander, Glenwood, silver.
LeFevre, A., Earlville, bronze.
Jackson, J. J., Earlville, bronze.
Johnson, N. C. A., Glenwood, silver.
Laraway, W. F., Glenwood, bronze.
Lattimer, L. B., Shenandoah, bronze.
Lotspeich, D. W., Woodbine, silver.
Martin, Herman, Mount Ayr, bronze.
Matthews, B. A., Knoxville, silver.
McCoy, H. D., Knoxville, silver.
McGinnis, James, Griswold, bronze.
Mitchell, J. B., Cresco, silver.
Moffett, D. E., Corning, gold.
Moore, D. S., Castana, bronze.
Murphy, J. W., Glenwood, bronze.
Parsons, M. de L., Irvington, silver.
Patten, C. G., Charles City, bronze.
Pidgeon, D. A., New Providence, silver.
Price, C. O., Ruthven, bronze.
Proudfit, J. J., Altoona, silver.
Reigler, Matthew, Specht's Ferry, silver.
Speer, R. P., Cedar Falls, silver.
Schwaller, A., Burlington, silver.
Shontz, B., Correctionville, silver.
Snow, Herman, Blakesburg, bronze.
Chapman, W. B., Blakesburg, bronze.
Snyder, S. W., Center Point, silver.
Stacy, Elmer, Glenwood, bronze.
Stuart, B., Altoona, silver.
Tippie, Mrs. S. P., Hastie, bronze.
Watson, A. C., Albia, bronze.
Waterman, J. L., Albia, bronze.
Wellons, J. F., Hartford, bronze.
White, Charles, Corning, bronze.
Winfrey, T. H., Hastie, bronze.
Wood, Alexander, Council Bluffs, bronze.
Wragg, M. J., Waukee, gold.
Wragg, W. B., Waukee, silver.
Wren, James, Knoxville, silver.

## LIVE STOCK.

### HORSES, GERMAN COACH. CLASS FOUR.

A. B. HOLBERT, GREELEY.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| *Numa 2014 | 4 | Fifth | $ 25.00 |
| Pappenheim 2062 | 3 | Fifth | 25.00 |
| Kittmeister 2085 | 2 | Second | 50.00 |
| Rival 2084 | 2 | Fourth | 30.00 |
| Rektor 2087 | 1 | Fourth | 25.00 |
| Waldemar 2507 | 1 | Fifth | 20.00 |
| Pilot 2509, foal | ... | Fourth | 25.00 |
| Finnie 5767 | 3 | Fifth | 25.00 |
| Adolphine 362 | 2 | Fourth | 30.00 |
| Lorena 364 | 1 | Sixth | H. C. |
| Olive 360 | 1 | Seventh | Com. |
| Regina 358, foal | ... | Second | 40.00 |
| Get of Sire Consul 624 | ...... | Third | 40.00 |
| Produce of Dam Lael 134 | ...... | Second | 40.00 |
| Produce of Dam Gertrude 184 | ...... | Fifth | H. C. |
| Stallion and four mares | .... | Third | 40.00 |
| Total | ...... | .......... | $ 415.00 |

Paid by Iowa Commission ........................................ $365.20.

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* Owned by W. A. Lang & Co., Greeley.

## PERCHERON, CLASS 10.

### E. F. KLEINMEYER, WILTON JUNCTION.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Queen's Paul 41275, foal | ...... | Second | $ 50.00 |
| Fedy C. 11952 | 4 | Fourth | 40.00 |
| Pride of P. H. II 28235 | 4 | Fifth | 30.00 |
| Paul's Model 29378 | 3 | Second | 75.00 |
| Quality Queen 29393 | 2 | Fourth | 40.00 |
| Stylish Pride 40565 | 1 | Fourth | 30.00 |
| Best Quality 40561, foal | ...... | First | 75.00 |
| Get of Sire, Colored Gentleman 4531 | ...... | Fourth | 45.00 |
| Get of Sire, Paul 19422 | ...... | Fifth | 30.00 |
| Produce of Dam, Feddy C. 11952 | ..... | Fifth | 40.00 |
| Produce of Dam, Marie 4562 | ..... | Sixth | H. C. |
| Stallion and four mares, aged | ...... | First | 150.00 |
| Stallion and four mares, young | ...... | Second | 100.00 |
| Stallion and four mares bred by exhibitor | ...... | First | 300.00 |
| Total | | .... | $ 1,005.00 |

Paid by Iowa Commission ........ $ 884.40

### ADAM STAMM, LETTS.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Gladys 31582 | 2 | Second | $ 75.00 |

Paid by Iowa Commission ........ $ 66.00

## HORSES—BELGIUM DRAFT, CLASS 14

### HENRY LEFEBURE, FAIRFAX.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Iowa Champion | 2 | Fifth | $ 25.00 |
| Brilliant II. 1373 | 1 | First | 50.00 |
| Brilliant III. 1374 | 1 | Second | 40.00 |
| Iowa Champion 1597, foal | ........ | First | 50.00 |
| Brilliant IV, foal | ........ | Second | 40.00 |
| Frissette 120 | 4 | First | 75.00 |
| Radiuse II. 145 | 4 | Second | 50.00 |
| Pollette 189 | 3 | First | 75.00 |
| Mignonette 215 | 3 | Second | 50.00 |
| Fanette 187 | 2 | First | 75.00 |
| Fillyette 190 | 2 | Second | 50.00 |
| Panzette 216 | 1 | First | 50.00 |
| Mynette 188 | 1 | Second | 40.00 |
| Maryette 218, foal | ....... | First | 50.00 |
| Lizette 217, foal | ........ | Second | 40.00 |
| Get of Sire Cyclone 2nd 1375 | ..... | Second | 50.00 |
| Get of Sire Brilliant 3rd 1374 | .... ... | Third | 40.00 |
| Produce of Dam Radiuse 2nd 145 | ........ | Second | 40.00 |
| Produce of Dam Panzyette 217 | ........ | Third | 35.00 |
| Stallion and four mares, aged | ........ | First | 75.00 |
| Stallion and four mares, young | ........ | First | 75.00 |
| Stallion and four mares, bred by exhibitor | ....... | First | 200.00 |
| Champion mare over 3 years, Frizette 120 | ....... | ........ | 100.00 |
| Champion mare under 3 years, Fanette 187 | ........ | First | 50 00 |
| Grand Champion mare, any age, Frisette, 120 | ........ | First | 150.00 |
| Total | ........ | ........ | $ 1,575.00 |

Paid by Iowa Commission ........ $ 1,386.00

## BELGIUM DRAFT, CLASS 14.

### A. B. HOLBERT, GREELEY.

| Name. | g . | Prize. | Amount. |
|---|---|---|---|
| Sidi 1428 | 3 | Fifth | $ 25.00 |
| Dragon de Bottey | 3 | Third | 40.00 |
| 25374 (owned by W. A. Lang & Co. Greeley) | | | |
| Cozette 208 | 3 | Third | 40.00 |
| Clarinette 207 | 1 | Third | 30.00 |
| Produce of Dam Jeanette 64 | | Fourth | 25.00 |
| Total | | | $ 160.00 |

Paid by Iowa Commission $ 140.80

## CATTLE—ANGUS.

### C. J. MARTIN, CHURDAN.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Bull, Juba of Morlick 62283 | 3 years | Fourth | $ 40.00 |
| Bull, Prince Ito 2d 54471 | 2 and under 3 years | First | 75.00 |
| Champion bull, senior, Prince Ito 2d | | First | 100.00 |
| Grand champion bull, Prince Ito 2d | | First | 200.00 |
| Cow, Blackbird 24th 44752 | 3 year old or over | First | 75.00 |
| Cow, Blackbird 26th 54457 | 2 and under 3 years | First | 75.00 |
| Cow, Black Cap 2d 64114 | 18 and under 24 months | Third | 50.00 |
| Cow, Cora Coquette 62590 | 12 and under 18 months | Fourth | 25.00 |
| Champion cow senior, Blackbird 26th | | First | 100.00 |
| Champion cow, reserve, Blackbird 24th | | Second | |
| Grand champion cow, Blackbird 26th | | First | 200.00 |
| Exhibitors' herd | | First | 125.00 |
| Get of sire, Black Monarch of Emerson | | First | 75.00 |
| Produce of Dam Blackbird, 12 | | Third | 55.00 |
| Steer | 6 and under 12 months | First | 40.00 |
| Total | | | $ 1,235.00 |

Paid by Iowa Commission $ 1,086.80

### W. A. M'HENRY, DENISON.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Bull, Western Star 46345 | 3 years | First | $ 75.00 |
| Bull, Censor 52882 | 2 and under 3 years | Second | 60.00 |
| Bull, Choice Goods 71671 | 6 and under 12 months | First | 50.00 |
| Champion bull, reserve, Western Star 46345 | | Second | |
| Cow, Blackbird, McHenry 13th 23942 | 3 years or over | Third | 50.00 |
| Cow, Erica McHenry 3d 52880 | 2 and under 3 years | Third | 50.00 |
| Cow, Blackbird McHenry 45th 54144 | 2 and under 3 years | Sixth | H. C. |
| Cow, Coquette McHenry 61880 | 18 and under 24 months | Second | 60.00 |
| Cow, Queen MeHenry 47th 61884 | 12 and under 18 months | Fifth | 20.00 |
| Exhibitors' herd | | Third | 80.00 |
| Young herd | | Fourth | 45.00 |
| Aged herd, female, bred by exhibitor | | First | 200.00 |
| Get of sire Laird of Estell | | Second | 65.00 |
| Produce of Dam Coquette MeHenry | | First | 75.00 |
| Total | | | $ 830.00 |

Paid by Iowa Commission $ 730.40

## CATTLE—ANGUS.

### E. T. DAVIS, IOWA CITY.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Bull, Woodman Blackbird Lad 35103 | 3 years | Sixth | H. C. |
| Bull, Lebus 63330 | 12 and under 18 months | Second | $ 40 00 |
| Cow, Blackbird of Denison 31st 38949 | 3 years or over | Second | 60.00 |
| Cow, Blackbird Favorite 2d 59234 | 2 years and under 3 | Second | 60.00 |
| Cow, Glenfoil Rose 63480 | 18 and under 24 months | First | 75.00 |
| Cow, Fay Bloom 56500 | 18 and under 24 months | Fifth | 30.00 |
| Cow, Inveness Fern 63334 | 12 and under 18 months | Sixth | H. C. |
| Cow, Priquette 72306 | 6 and under 12 months | Second | 40.00 |
| Cow, Marguerite 72307 | Under 6 months | Second | 40 00 |
| Champion cow, Junior Glenfoil Rose 63480 | | First | 75.00 |
| Grand champion reserve | | Second | |
| Aged herd | | First | |
| Young herd | | First | 75.00 |
| Young herd female, bred by exhibitor | | First | 200.00 |
| Get of Sire Western Star 46345 | | Fifth | 40.00 |
| Produce of Dam Dandy of Langshold 60275 | | Fifth | 40.00 |
| Total | | | $ 875.00 |

Paid by Iowa Commission .......... $ 770.00

### WM. MILLER, METZ.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Bull, Sir Novice 49775 | 2 and under 3 years | Fifth | $ 30.00 |
| Cow, Snowflake 2d of Kirkbridge 64016. | 2 and under 3 years | Fifth | 30.00 |
| Cow, Home Dale Blackbird 3rd 72798 | Under 6 months | Seventh | Com. |
| Grade steer by recorded sire | 2 and under 3 years | First | 40.00 |
| Grade steer by recorded sire | 18 and under 24 months | First | 40.00 |
| Grade steer by recorded sire | 6 and under 12 months | First | 40 00 |
| Champion steer | | | 100.00 |
| Total | | | $ 280.00 |

Paid by Iowa Commission .......... $ 246.40

### A. C. BINNIE, ALTA.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Bull, Mayor of Alta 2d 38552 | 3 years | Fifth | $ 30.00 |
| Bull, Postscript, Vol. 14 | 6 and under 12 months | Sixth | Com. |
| Cow, Eileen Lass, Vol. 14 | 6 and under 12 months | First | 50.00 |
| Cow, Mina of Alta 5th, Vol. 14 | Under 6 months | Third | 30.00 |
| Get of Sire Heather Lad of Emerson 2d 19049 | | Fourth | 45.00 |
| Produce of Dam Lakeside Mina 22567 | | Fourth | 45.00 |
| Total | | | $ 200.00 |

Paid by Iowa Commission .......... $ 176.00

## CATTLE—ANGUS.

### W. B. SEELEY, MT. PLEASANT.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Bull, Blackbird Ito 64116 | 18 and under 24 months | First | $ 75.00 |
| Bull, Crown Me 71774 | Under 6 months old | Seventh | Com. |
| Bull, Reserve Junior Champion Blackbird Ito 64116 | | Second | |
| Cow, Alva of La Crew 2d 52018 | 2 and under 3 years | Seventh | Com. |
| Cow, Rose of Sharon 22d 65879 | 6 and under 12 months | Sixth | H. C. |
| Young herd | | Fifth | 40.00 |
| Pure bred steer | 2 and under 3 years | Third | 25.00 |
| Pure bred steer | Under 6 months | Second | 30.00 |
| Grade steer | 2 and under 3 years | Second | 30.00 |
| Steer | 12 and under 18 months | First | 40.00 |
| Steer | 6 and under 12 months | Second | 30.00 |
| Total | | | $ 270.00 |

Paid by Iowa Commission ........ $ 237.60

## CATTLE—GALLOWAY.

### E. H. WHITE, ESTHERVILLE.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Bull, Muscosus 3rd 15914 | 3 years or over | Sixth | Com. |
| Bull, Buedo of White Farm 20952 | 2 or under 3 years | Fifth | $ 30.00 |
| Bull, Banker of White Farm 24374 | 18 and under 24 months | Second | 60.00 |
| Bull, Gilt Edge 24871 | Under 6 months | First | 50.00 |
| Cow, Gentle Annie A. 15417 | 3 years or over | Seventh | Com. |
| Cow, Annette of White Farm 24372 | 12 and under 18 months | Second | 40.00 |
| Cow, Lady Garland 24870 | 6 and under 12 months | First | 50.00 |
| Cow, Countess Nannie 2nd 24869 | Under 6 months | Fifth | 20.00 |
| Herd, aged | | Fourth | 65.00 |
| Herd, young | | Fifth | 40.00 |
| Get of Sire Muscosus 3rd 14914 | | Fifth | 40.00 |
| Produce of Dam Duchess Edith 11554 | | Second | 65.00 |
| Produce of Dam Sadie Sioux | | Sixth | H. C. |
| Total | | | $ 460.00 |

Paid by Iowa Commission ........ $ 404.80

### J. E. BALES & SON, STOCKPORT.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Bull, MacDougall 4th of Tarbreoch 19300 | 3 years or over | Fifth | $ 30.00 |
| Bull, Judies Pride 23199 | 12 and under 18 months | Seventh | Com. |
| Bull, Canty Lad 24714 | Under 6 months | Fifth | 20.00 |
| Cow, Graceful 3rd of Garliestown 19297 | 3 years or over | Third | 50.00 |
| Cow, Doreothea 18673 | 3 years or over | Fourth | 40.00 |
| Cow, Mandie Wedholme 20633 | 2 and under 3 years | Sixth | H. C. |
| Cow, Semiramis Wilson 23197 | 18 and under 24 months | Third | 50.00 |
| Cow, Graceful A. 23088 | 12 and under 18 months | Sixth | H. C. |
| Cow, Fedora 24706 | 6 and under 12 months | Fifth | 20.00 |
| Cow, Flower Girl 2nd 24705 | Under 6 months | Sixth | H. C. |
| Herd, aged | | Sixth | H. C |
| Herd, young | | Sixth | H. C. |
| Total | | | $ 210.00 |

Paid by Iowa Commission ........ $ 184.80

## SHORTHORN.

### FOREST BROS. & DUNHAM, MILES.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Bull, Blocky Victor 223596 | 12 and under 18 months. | Fourth. | $ 25.00 |
| Bull, Fenimore Glenhaven 223857 | 12 and under 18 months. | Seventh | Com. |
| Bull, Roan Inglewood 223598 | Under 6 months | Second. | 40.00 |
| Cow, Fenimore Louise Vol. 60 | 12 and under 18 months. | Seventh | Com. |
| Cow, Red Lady Vol. 60 | 6 and under 12 months. | Sixth | H. C. |
| Total |  |  | $ 65.00 |
| Paid by Iowa Commission |  |  | $ 57.20 |

### WM. SMILEY, MALCOM.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Steer, pure bred | 2 and under 3 years | Third | $ 25.00 |
| Steer, pure bred | 18 and under 24 months. | Third | 25.00 |
| Steer, pure bred | 6 and under 12 months. | Second. | 30.00 |
| Steer from recorded sire | 6 and under 12 months. | First. | 40.00 |
| Total |  |  | $ 120.00 |
| Paid by Iowa Commission |  |  | $ 105.60 |

### R. G. ROBB & SON, MORNING SUN.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Bull, Graceful Archer 224034 | Under 6 months | Fourth. | $ 25.00 |
| Paid by Iowa Commission |  |  | $ 22.00 |

## HOLSTEIN.

### M'KAY BROS., BUCKINGHAM.

| Name of Animal. | Age. | Prize. | Amount. |
|---|---|---|---|
| Bull, Pube De Kol Burke, 25368 | 3 years or over | Fifth | $ 30.00 |
| Bull, Major Gudultje, 31870 | 2 years and under 3 | Second | 60.00 |
| Bull, Prince Clothilde Madrigal 35155 | Under 1 year | Fifth | 20.00 |
| Cow, Loda Beauty Hengerveld, 69466 | Under 1 year | Third | 30.00 |
| Young Herd |  | Fourth | 45.00 |
| Get of Sire Butler Boy Hengeveld De Kol, 24937 |  | Third | 55.00 |
| Produce of Dam Gudultje 31483 |  | Fifth | 40.00 |
| Total |  |  | $ 280.00 |
| Paid by Iowa Commission |  |  | $ 246.40 |

## CATTLE—HEREFORD.

### FRITZ & SHEA, BLAKESBURG.

| Name of Animal. | Age. | Prize. | Amount. |
|---|---|---|---|
| Cow, Dorinda, 135872 | 3 years | Fifth | $ 30.00 |
| Total |  |  | $ 30.00 |

Paid by Iowa Commission ........ $ 26.40

## CATTLE—CARLOAD LOTS.

### CHARLES ESCHER, SR., BOTNA.

| Name of Animal. | Age. | Prize. | Amount. |
|---|---|---|---|
| One carload cattle | 2 and under 3 years | First | $ 125.00 |
| One carload cattle | 1 and under 2 years | First | 125.00 |
| One carload cattle | 1 and under 2 years | Second | 75 00 |
| Total |  |  | $ 325.00 |

Paid by Iowa Commission ........ $ 286.00

## SWINE—POLAND CHINA.

### B. S. GOSSICK, FAIRFIELD.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Boar, G's Perfection 2nd 87777 | 12 and under 18 months | Second | 50.00 |
| Sow, Lady Lucille 221260 | 6 and under 12 months | First | 40.00 |
| Sow, Champion Lady Lucille 221260 | Under 1 year |  | 75.00 |
| Sow, Grand Champion Lady Lucille 221260 |  |  | 150.00 |
| Total |  |  | $ 315.00 |

Paid by Iowa Commission ........ $ 277.20

### HOLLAND & COOK, NEW LONDON.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Boar, Perfect Tec 2nd 88099 | 12 and under 18 months | Fifth | $ 25.00 |
| Boar | 6 and under 12 months | Fourth | 25.00 |
| Total |  |  | $ 50.00 |

Paid by Iowa Commission ........ $ 44.00

## SWINE—POLAND CHINA.

### C. E. BLUNT & CO., ROCK RAPIDS.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Boar, Blunt's Perfection 67823 | 2 years and over | Third | $ 40.00 |
| Barrow | Under 6 months | Second | 15.00 |
| Total | | | $ 55.00 |

Paid by Iowa Commission $ 48.40

### THOS. STEPHENSON, CHARITON.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Boar, Iowa Chief 87745. | Under 6 months | Third | $ 30.00 |

Paid by Iowa Commission $ 26.40

### A. J. LYTLE, OSKALOOSA.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Sow, Pride Sunshine 222274 | 12 and under 18 months | Fifth | $ 25.00 |
| Barrow | 1 and under 2 years | Fourth | |
| Barrow | 6 and under 12 months | Third | 15.00 |
| Barrow | Under 6 months | First | 20.00 |
| Total | | | $ 60.00 |

Paid by Iowa Commission $ 52.80

## SWINE—CHESTER WHITE.

### E. J. BROUHARD, COLO.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Boar, Captain 14199 | 12 and under 18 months | First | $ 60.00 |
| Boar, Teddy 14121 | Under 6 months | Fifth | 20.00 |
| Sow, Baby Bell 32026 | Under 6 months | First | 40.00 |
| Sow, Leonas Pet 32032 | Under 9 months | Fourth | 25.00 |
| Total | | | $ 145.00 |

Paid by Iowa Commission $ 127.00

## SWINE—CHESTER WHITE.

### F. D. HUMBERT, NASHUA.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Boar, Jerry 14197 | 2 years and over | Fourth | $ 30.00 |
| Boar, Combination 13057 | 2 years and over | Fifth | 25.00 |
| Boar, Combination 2d | 12 and under 18 months | Fifth | 25.00 |
| Boar, Sol 14195 | 6 and under 12 months | Fourth | 25.00 |
| Boar, Nashua Boy 14211 | 6 and under 12 months | Seventh | Com. |
| Sow, Cora 29800 | 2 years and over | First | 60.00 |
| Sow, Columbia 29802 | 2 years and over | Fifth | 25.00 |
| Sow, Idelia 32176 | 18 and under 24 months | Fourth | 30.00 |
| Sow, Judy 1st | 12 and under 18 months | Fourth | 30.00 |
| Sow, Sue 3rd | 6 and under 12 months | Third | 30.00 |
| Get of Sire Alta H. 11631 | | Fourth | 40.00 |
| Produce of Dam Judy 26386 | | Second | 45.00 |
| Boar and 3 sows | Over 1 year | Third | 50.00 |
| Boar and 3 sows | Under 1 year | Seventh | Com. |
| Total | | | $ 415 00 |

Paid by Iowa Commission ........................................ $ 365.20

### W. A. HOOVER, OSKALOOSA.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Boar, College Teddy 12805 | 2 years and over | Third | $ 40.00 |
| Boar, Billy A 14147 | 12 and under 18 months | Third | 40.00 |
| Sow, Grace W 28848 | 2 years or over | Second | 50.00 |
| Sow, Iowa Girl 3d 26832 | 2 years or over | Fourth | 30.00 |
| Sow, Iowa Girl 32092 | 18 and under 24 months | Third | 40.00 |
| Sow, Hawkeye Girl 32100 | 12 and under 18 months | First | 60.00 |
| Sow, 2d 32094 | 6 and under 12 months | Second | 35.00 |
| Get of Sire Teddy R 11305 | | Second | 60.00 |
| Get of Sire Oskaloosa King 11839 | | Fifth | 30.00 |
| Produce of Dam Blanche 19149 | | Third | 35 00 |
| Produce of Dam Iowa 32092 | | Seventh | |
| Boar and three sows | Over 1 year | Second | 75.00 |
| Boar and three sows | Over 1 year | Fifth | 30.00 |
| Boar and three sows | Over 1 year | Second | 60.00 |
| Boar and three sows bred by Exhibitor. | 1 year or over | Second | |
| Barrow | 1 year and under 2 years | Fourth | |
| Barrow | 1 year and under 2 years | Fifth | |
| Pen, three barrows | 1 year and under 2 years | Second | 50 00 |
| Pen, three barrows | 1 year and under 2 years | Third | 40.00 |
| Senior champion sow, Hawkeye Girl 32100 | | First | 100.00 |
| Grand champion reserve sow, Hakweye Girl 32100 | | Second | |
| Total | | | $ 775.00 |

Paid by Iowa Commission ........................................ $ 632.00

## SWINE—DUROC JERSEY.

### JOHNSON BROS. & NEWKIRK, BROOKLYN.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Boar, Gay Advance 28775 | 18 and under 24 months | Sixth | H. C. |
| Sow, Brooklyn Mabel 33818 | 2 years and over | Third | $ 40.00 |
| Sow, Lady Advance 70734 | 18 and under 24 months | Fourth | 30.00 |
| Sow, Estella Advance 57548 | 18 and under 24 months | Fifth | 25.00 |
| Sow, May Advance 70728 | 12 and under 18 months | Third | 40.00 |
| Sow, Oriole 71522 | 12 and under 18 months | Fifth | 25.00 |
| Sow, Fashion Queen 11th 71526 | Under 6 months | Fifth | 20.00 |
| Produce of Dam Lucy D 2d 18106 | | Third | 35.00 |
| Boar and three sows | Over 1 year | Fourth | 40.00 |
| Barrow | 1 year and under 2 | Second | 25.00 |
| Barrow | 1 year and under 2 | Third | 15.00 |
| Pen of three barrows | 1 year and under 2 | First | 60.00 |
| Champion pen of three barrows | Any age | First | 100.00 |
| Total | | | $ 455.00 |

Paid by Iowa Commission $ 400.40

### H. C. SHELDON, SHANNON CITY.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Barrow | Under 6 months | First | $ 20.00 |
| Pen of three barrows | 6 and under 12 months | Third | 40.00 |
| Barrows by recorded sire | Under 6 months | First | 20.00 |
| Total | | | $ 80.00 |

Paid by Iowa Commission $ 70.40

### H. S. ALLEN, RUSSELL.

| Name. | Age. | Prize. | Amount. |
|---|---|---|---|
| Sow, Nelle "A" 34146 | 2 years and over | Fifth | $ 25.00 |
| Barrow | 6 and under 12 months | First | 30.00 |
| Pen of 3 barrows | 6 and under 12 months | First | 60.00 |
| Total | | | $ 115.00 |

Paid by Iowa Commission $ 101.20

## POULTRY.

### L. HILES, SIOUX CITY.

| Name of Fowl. | Prize. | Amount. |
|---|---|---|
| R. C. Buff Leghorn Cockerel | Second | $ 4.00 |
| R. C. Buff Leghorn Pullet | Second | 4.00 |
| Total | | $ 8.00 |

Paid by Iowa Commission $ 7.04

## POULTRY.

### W. PERKINS, AMES.

| Name of Fowl. | Prize. | Amount. |
|---|---|---|
| Black Langshan, pen | Third | $ 4.00 |
| Total | | $ 4.00 |
| Paid by Iowa Commission | | $ 3.52 |

### J. F. DAVIS, MACEDONIA.

| Name of Fowl. | Prize. | Amount. |
|---|---|---|
| Buff Cochin Cockerel | Third. | $ 4.00 |
| Total | | $ 4.00 |
| Paid by Iowa Commission | | $ 3.52 |

### N. E. MIGHELL, MARSHALLTOWN.

| Name of Fowl. | Prize. | Amount. |
|---|---|---|
| Light Brahma Cock | First | $ 10.00 |
| Light Brahma Cockerel | Third | 4.00 |
| Total | | $ 14.00 |
| Paid by Iowa Commission | | $ 12.32 |

### J. J. ELLIOTT, ONAWA.

| Name of Fowl. | Prize. | Amount. |
|---|---|---|
| Buff Plymouth Rock Cockerel | Second | $ 6.00 |
| Total | | $ 6.00 |
| Paid by Iowa Commission | | $ 5.28 |

### J. W. SUEPPEL, IOWA CITY.

| Name of Fowl. | Prize. | Amount. |
|---|---|---|
| Dark Brahma Cockerel | First | $ 10.00 |
| Dark Brahma Hen | Second | 6.00 |
| Dark Brahma Pullet | Second | 6.00 |
| Dark Brahma Hen | Second | 6.00 |
| Total | | $ 28.00 |
| Paid by Iowa Commission | | $ 24.64 |

## POULTRY.

### N. J. SHANKLAN, WAUBEEK.

| Name. | Prize. | Amount. |
|---|---|---|
| Patridge Cochin, Cockerel | First | $ 10.00 |
| Cockerel | Third | 4.00 |
| Hen | First | 10.00 |
| Hen | Second | 6.00 |
| Pullet | First | 10.00 |
| Pullet | Second | 6.00 |
| Hen | First | 10.00 |
| Total | | $ 56.00 |

Paid by Iowa Commission, $ 49.28

### W. A. SHOFER, BLOOMFIELD.

| Name. | Prize. | Amount. |
|---|---|---|
| Partridge Wyandotte, Pullet | Third | $ 4.00 |
| Total | | $ 4.00 |

Paid by Iowa Commission, $ 3.52

## DAIRYING.

### SCORES IN BUTTER AVERAGING OVER NINETY-SIX POINTS.

| | |
|---|---|
| L. S. Edwards, Lamont, 96.62 | Gold Medal |
| W. B. Johnson, Arlington, 96.35 | Gold Medal |
| S. W. Laird, Walker, 96.06 | Gold Medal |

Iowa State exhibit received a Gold Medal on the excellence of its display of ornamental butter.

| | |
|---|---|
| The Diamond Creamery Company, Monticello, butter in sealed cans | Gold Medal |

## AWARDS IN APIARY DEPARTMENT.

| | |
|---|---|
| State of Iowa, on comb honey as a whole | Silver Medal |

## DEPARTMENT OF EDUCATION.

### GROUP 1, PRIMARY AND ELEMENTARY EDUCATION:

| | |
|---|---|
| Iowa Commission | Grand Prize. |
| Council Bluffs | Gold Medal |
| Davenport | Gold Medal |
| Marshalltown | Gold Medal |
| Des Moines | West, Gold Medal |
| Polk County | Bronze Medal |
| Dubuque | Gold Medal |

### GROUP 2, SECONDARY EDUCATION:

| | |
|---|---|
| State Normal School | Gold Medal |
| East Des Moines, Dubuque and Burlington, collectively | Gold Medal |
| Davenport, West Des Moines and Marshalltown, collectively | Silver Medal |

### GROUP 3, COLLEGE, UNIVERSITY AND HIGHER EDUCATION:

| | |
|---|---|
| Iowa State University | Silver Medal |
| Iowa Library Commission | Silver Medal |
| Iowa College, Grinnell | Silver Medal |
| Cornell College | Silver Medal |

### GROUP 8, MISCELLANEOUS.

| | |
|---|---|
| F. J. Sessions, collaborator | Gold Medal |
| Statistical charts, prepared by C. M. Sessions | Silver Medal |

## MANUFACTURES.

### INDIVIDUAL EXHIBITORS AND AWARDS.

| | |
|---|---|
| Adams & Co., Dubuque, foundry machinery | Gold Medal |
| G. W. Barnes, Boone, mineral water | Grand Prize |
| Burg Wagon Co., Burlington, wagon | Grand Prize |
| Beck & Sons, Cedar Rapids, wagons | Gold Medal |
| Bettendorf Axle Co., Davenport, wagons | Gold Medal |
| Bettendorf Axle Co., Davenport, corn cutters | Grand Prize |
| R. S. Caward, Cresco, stump pulling machine | Gold Medal |
| Cement Block Machinery Co., Burlington, moulds | Gold Medal |
| Dodd & Struthers, Des Moines, electrical appliances | Highest Award on Lightning Rods |
| C. A. Dunham & Co., Marshalltown, steam traps | Bronze Medal |
| Economy Rug Co., Davenport, rug macainery | Gold Medal |
| Fort Madison & Appanoose Stone Co., Fort Madison, stone | Gold Medal |
| Fisher Governor Co., Marshalltown, valves, governors, etc. | Gold Medal and Diploma |
| Fish Bros. Manufacturing Co., Clinton, wagons | Gold Medal |
| Herrick Refrigerator Co., Waterloo, refrigerators | Gold Medal |
| Iowa Dairy Separator Co., Waterloo, cream separators | Gold Medal |
| Lee Broom and Duster Co., Davenport, brooms, etc. | Gold Medal |
| Louden Machinery Co., Fairfield, barn equipments | Grand Prize |
| Lamb Boat and Engine Co., Clinton, engines and boats | Silver Medal |
| Murray Iron Works, Burlington, 800-horse power Corliss engine | Gold Medal |
| John Morrell & Co., Ottumwa, meats, canned | Gold Medal |
| Morrison Manufacturing Co., Fort Madison, plows, etc. | Gold Medal |
| G. W. McNaught & Sons, Glidden, shelving for stores | Silver Medal |
| Nichols Manufacturing Co., Ottumwa, carpenters' tools | Silver Medal |
| Scott Manufacturing Co., Keokuk, clay working machinery | Silver Medal |
| T. M. Sinclair & Co., Cedar Rapids, hams, bacons, lard | Gold Medal |
| Star Manufacturing Co., What Cheer, miners' tools and equipage | Grand Prize |

### DEPARTMENT OF ANTHROPOLOGY.

| | |
|---|---|
| State of Iowa | Grand Prize and Diploma |
| Mr. Charles Aldrich, Curator and Founder of Historical Department | Gold Medal and Diploma |
| Prof. C. A. Cumming | Silver Medal and Diploma |

Department was awarded Bronze Medal and Diploma on the great stone axe.

### SUMMARY OF EXHIBIT.

Seventeen oil portraits.
Thirteen books and bound manuscripts.
Fourteen maps.
One stone axe (weight 31¾ lbs).

# PART IX.

## FARMERS' INSTITUTES IN IOWA.

### PROVISION FOR THE ENCOURAGEMENT OF FARMERS' INSTITUTES IN IOWA.*

**Farmers' Institutes—State aid—appropriation.** When forty or more farmers of a county organize a farmers' county institute, with a president, secretary, treasurer and an executive committee of not less than three outside of such officers, and hold an institute, remaining in session not less than two days in each year, which institute may be adjourned from time to time and place to place in said county, the county auditor, upon proof of such organization and such institute having been held, together with an itemized statement, showing the manner in which the money herein appropriated has been expended, shall certify the same to the auditor of State, who shall remit to the treasurer of such county his warrant for not to exceed seventy-five dollars, and there is hereby appropriated, out of the moneys in the State treasury not otherwise appropriated, a sum not to exceed seventy-five dollars annually for such institute work in each county. No officer of any such farmers' institute shall receive, directly or indirectly, any compensation from said State fund for services as such officer. (Code Supplement, 1902. Chapter 3, Section 1675.)

### OFFICERS OF COUNTY FARMERS' INSTITUTES IN IOWA 1904-1905.

ADAMS—President, Jerome Smith, Corning, Iowa; Secretary, Geo. E. Bliss, Corning, Iowa.

AUDUBON—President, H. F. Jones, Hamlin, Iowa; Secretary A. H. Edwards, Audubon, Iowa.

BENTON—President, Fred McCulloch, Hartwick, Iowa; Secretary, G. R. Ahrens, Belle Plaine, Iowa.

BLACK HAWK—President, Chas. E. Hearst, Cedar Falls, Iowa; Secretary, H. A. Smucker, Waterloo, Iowa.

BREMER—President, E. C. Bennett, Tripoli, Iowa; Secretary, L. C. Oberdorf, Waverly, Iowa.

BUCHANAN—President, W. H. Warburton, Independence, Iowa; Secretary, J. N. Muncey, Jesup, Iowa.

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* See page 96 of this report, for section of Code governing representation of institutes at the annual agicultural convention.

BUENA VISTA—President, P. F. Kinne, Storm Lake, Iowa; Secretary, S. R. Haines, Storm Lake, Iowa.

BUTLER—President, Geo. Adair, Shell Rock, Iowa; Secretary, E. E. Wilcox, Shell Rock, Iowa.

CALHOUN—President, A. F. Jamison, Rinard, Iowa; Secretary, Henry Parsons, Rockwell City, Iowa.

CARROLL—President, George Gregory, Ralston, Iowa; Secretary, W. F. Stiegerwalt, Carroll, Iowa.

CEDAR—President, H. P. Hartley, West Liberty, Iowa; Secretary, W. H. Erb, West Liberty, Iowa.

CERRO GORDO—President, A. Sherman, Clear Lake, Iowa; Secretary, Arthur Packford, Nora Springs, Iowa.

CHEROKEE—(Cherokee)—President, W. P. Dawson, Quinby, Iowa; Secretary; D. Phelen, Cherokee; (Washta)—President, G. W. Harrison, Washta, Iowa; Secretary, Victor Felter, Washta, Iowa.

CHICKASAW—President, J. M. Heald, Nashua, Iowa; Secretary, C. L. Johnson, Nashua, Iowa.

CLAY—President, Wm. Torbert, Spencer, Iowa; Secretary, R. E. Brownell, Spencer, Iowa.

CLAYTON—President, M. G. Arnold, Strawberry Point, Iowa; Secretary, O. K. Whitlock, Strawberry Point, Iowa.

CLINTON—President, E. C. Forest, Miles, Iowa; Secretary, R. D. Allison, DeWitt, Iowa.

DALLAS—President, Edward Vial, Adel, Iowa; Secretary, M. J. Graham, Adel, Iowa.

DECATUR—President, Fred Wooley, High Point, Iowa; Secretary, G. P. Arnold, Graden Grove, Iowa.

DELAWARE—President. T. H. Carrothers, Ryan, Iowa; Secretary, Chas. Clute, Manchester, Iowa.

DICKINSON—President, J. T. Webb, Spirit Lake, Iowa; Secretary, Grant Lynn, Spirit Lake, Iowa.

DUBUQUE—President, J. F. Fober, Cascade, Iowa; Secretary, John Maire, Cascade, Iowa.

EMMET—President, W. S. Reed, Estherville, Iowa; Secretary, H. W. Woods, Estherville, Iowa.

FAYETTE—President, J. L. Paine, Fayette, Iowa; Secretary, T. W. Potter, Fayette, Iowa.

FLOYD—President, H. N. Merrick, Marble Rock, Iowa; Secretary, George Russell, Greene, Iowa.

FRANKLIN—President, W. E. Ferris, Hampton, Iowa; Secretary, J. V. Blackford, Hampton, Iowa.

FREMONT—President, J. L. Irwin, Thurman, Iowa; Secretary, L. E. Holloway, Sidney, Iowa.

GREENE—President, R. G. Martin, Dana, Iowa; Secretary, Harry Harding, Jefferson, Iowa.

GRUNDY—President, F. V. Stout, Stout, Iowa; Secretary, E. S. King, Grundy Center, Iowa.

GUTHRIE—President, Grant Chapman, Bagley, Iowa; Secretary, S. J. Reed, Guthrie Center, Iowa.

HANCOCK—President, F. J. Oxley, Corwith, Iowa; Secretary, G. P. Merten, Garner, Iowa.

HARDIN—President, George S. Forrest, Iowa Falls, Iowa; Secretary, W. Carpenter, Iowa Falls, Iowa.

HARRISON—President, Homer E. Cadwell, Logan, Iowa; Secretary, Fannie E. Buck, Logan, Iowa.

HOWARD—President, S. A. Converse, Cresco, Iowa; Secretary, John Steiman, Cresco, Iowa, R. F. D. No. 2.

HUMBOLDT—President, A. A. McKitrick, Humboldt, Iowa; Secretary, A. D. Cromwell, Humboldt, Iowa.

IDA—President, A. A. Ranch, Ida Grove, Iowa; Secretary, E. G. Preston, Battle Creek, Iowa.

IOWA—President, Fred G. Turner, North English, Iowa; Secretary, Fred Boland, Williamsburg, Iowa, R. F. D. No. 3.

JACKSON—President, L. B. Parshall, Canton, Iowa; Secretary, L. L. Littlefield, La Motte, Iowa.

JASPER—President, J. C. Haifleigh, Newton, Iowa; Secretary, T. J. Kating, Newton, Iowa.

JEFFERSON—President, J. P. Manatrey, Fairfield, Iowa; Secretary, Hiram Heaton, Glendale, Iowa.

KEOKUK—President, J. W. Lemley, Richland, Iowa; Secretary, G. E. Barnhart, South English, Iowa.

KOSSUTH—President, M. De L. Parsons, Irvington, Iowa; Secretary, J. B. Hoffins, Algona, Iowa.

LINN—(Coggon) President, J. L. Plumly, Springville, Iowa; Secretary, Edgar W. Penley, Waubeek, Iowa. (Walker) President, John Wilson, Walker, Iowa; Secretary, George Hayzlett, Walker, Iowa.

LOUISA—President, C. B. Wilson, Morning Sun, Iowa; Secretary, W. A. Swan, Morning Sun, Iowa.

LYON—President, J. R. Skewis, Inwood, Iowa; Secretary, G M. Anderson, Inwood, Iowa.

MADISON—President, H. H. Hawk, Winterset, Iowa; Secretary, H. A. Mueller, Winterset, Iowa.

MAHASKA—President, A. Roe, Oskaloosa, Iowa; Secretary, J. H. Williams, Oskaloosa, Iowa.

MARION—President, D. W. Ward, Knoxville, Iowa; Secretary, N. F. Miller, Knoxville, Iowa.

MARSHALL—President, W. H. Arney; Secretary, W. H. Wilson

MILLS—President, H. H. Woodrow, Malvern, Iowa; Secretary, W. P. Wortman, Malvern, Iowa.

MITCHELL—President, A. H. Elver, Osage, Iowa; Secretary, John Torsleff, West Mitchell, Iowa.

MONONA—President, W. T. Way, Castana, Iowa; Secretary, M. A. Wiley, Castana, Iowa.

MONROE—President, E. B. Morris, Albia, Iowa; Secretary, W. A. Rowles, Albia, Iowa.

MUSCATINE—President, G. W. Kelley, Wilton Junction, Iowa; Secretary, C. W. Norton, Wilton Junction, Iowa.

OSCEOLA—President, W. J. Reeves, Sibley, Iowa; Secretary, J. Truckenmiller, Sibley, Iowa.

O'BRIEN—President, D. M. Norton, Sanborn, Iowa; Secretary, H O. Smith, Primghar, Iowa.

PAGE—President, D. D. Stitt, Yorktown, Iowa; Secretary, J. E. Sawhill, Clarinda, Iowa.

PALO ALTO—President, J. O. Overholt, Graettinger, Iowa; Secretary, B. J. Bergeson, Graettinger, Iowa.

POCAHONTAS—President, A. Hurdeck, Pocahontas, Iowa; Secretary, C. W. Clifton, Havelock, Iowa.

POLK—President, Frank Justice, Ankeny, Iowa; Secretary, Nelson Gormley, Ankeny, Iowa.

POWESHIEK—(Deep River) H. H. Connell, Deep River, Iowa; Secretary, C. Hughes, Deep River, Iowa. (Hartwick) President, M. D. Korns, Hartwick, Iowa; Secretary, Wm. Fisher, Hartwick, Iowa.

RINGGOLD—President, W. F. Sconce, Benton, Iowa, R. F. D. No. 1; Secretary, Walter H. Beal, Mt. Ayr, Iowa.

SAC—President, J. C. Owells, Sac City, Iowa; Secretary, Mrs. Robert Englehardt, Sac City, Iowa.

SCOTT—President, B. F. Seaman, Davenport, Iowa; Secretary, Henry Lau, Davenport, Iowa, R. F. D. No. 4.

SHELBY—President, H. B. Kess, Harlan, Iowa; Secretary, W. M. Bombarger, Harlan, Iowa.

SIOUX—President, J. C. Emery, Orange City, Iowa; Secretary, Geo A. Sheldon, Hull, Iowa.

STORY—President, C. W. Mills, Ames, Iowa; Secretary, George C. White, Nevada, Iowa.

TAMA—President, Welcome Mowry, Clutier, Iowa; Secretary, Arthur Calderwood, Traer, Iowa.

TAYLOR—President, James Edmunds, Lenox, Iowa; Secretary, Bert Johnston, Clearfield, Iowa.

UNION—President, P. C. Winter, Creston, Iowa; Secretary, A. L. Huntington, Creston, Iowa, R. F. D. No. 3.

VAN BUREN—President, Samuel Lindsay, Burmingham, Iowa; Secretary, E. R. Harlan, Keosauqua, Iowa.

WINNEBAGO—President, Eugene Secor, Forest City, Iowa; Secretary, J. H. Anderson, Forest City, Iowa.

WINNESHIEK—President, W. N. Drake, Decorah, Iowa; Secretary, A. J. C. Wingate, Prosper, Minnesota.

WORTH—President, T. L. Bolton, Northwood, Iowa; Secretary, E. J. McQuatters, Northwood, Iowa, R. D. F. No. 2.

WRIGHT—President, C. Dawson, Clarion, Iowa; Secretary, D. P. Norton, Clarion, Iowa.

## TOPICS DISCUSSED BEFORE INSTITUTES.

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### AGRICULTURE.

Improvement of corn.
Farm fencing.
Sugar beets.
Culture and agriculture.
Is it practical to plant timber for fence posts?
Commercial grading of corn
The improvement of farm crops.
Best methods of producing and harvesting.
Rotation of crops.
More grass on our farms for profit.
Maintenance of soil fertility.
Obnoxious weeds. What we pay for them and what are we to do with them.
How can we make one hundred dollars per acre land pay?
Farm economics.
Will it pay to farm at present prices of grain and live stock?
How I raise sheep and cows on seventy-five dollars per acre land for profit.
Taking into consideration capital, risk, labor and knowledge, what is a fair and equal division of the value of a bushel of corn between producer, feeder, transportation companies and middleman.
The hay crop. Best methods of handling.
Value of corn fodder as food for stock.
Benefits of clover.
Speciality farming.

### HORTICULTURE.

Fall apples. What shall we do with them?
Small fruits.
The value of horticulture on the farm.
Object lesson in pruning.
Fruit growing and forestry.
Fruits adapted to this climate.
The farmer's vineyard.
Fruit trees and their culture.

### HORSES.

Talk on the horse.
How should the farm horse be managed, and the best way to fit a draft horse for market?
The draft horse.
How can horse raising be made profitable?
Mules a source of profit.

### CATTLE.

Beef production.
Does it pay the ordinary farmer to raise registered cattle?
The relation of pure bred cattle to the production of beef.
Beef type and beef production.
Facts for cattle feeders.
The advantages of silos for dairymen and stockmen.
How to improve the dairy herd.
What breed of cattle is best adapted to the average farm?
Can the average farmer feed a load of cattle each year and make it pay?
Ensilage and its advantages to our cattle industry.
Shorthorn and Herefords for the feed lot.
Cattle feeding—Methods and results.
The milk and butter side of the cattle business.
Cotton seed meal as a feed, and how to feed it.
Experience in treating lump jaw cattle.
The cow.

### SWINE.

The weanling pig. How it can be made marketable at eight months old.
Raising pigs and calves in connection with farm dairy.
Profitable hog raising.
The hog market of the future.
Economic pork production.
Contagious diseases of hogs.
Hog raising as an art.
Alfalfa and the hog.
The variety growth elements in corn for the pig.
Care of sow and feeding the pigs.
The coming hog.

### SHEEP.

Sheep raising in Iowa.
Is it profitable to raise sheep in a small way on the average farm?
Sheep husbandry.

### DAIRY AND CREAMERY.

The mutual interest of patron and creamery.
Creameries and dairying.
Feeding for butterfat.
How can dairying be managed to make it profitable on the farm?
The production of milk and its manufacture into butter.
Centralization vs. local creameries.
Home dairy vs. local creameries.
Experience with hand separator.

### POULTRY.

Should poultry on the farm be made one of the leading industries?
The incubator or hen for profitable poultry raising, and what should the chicks be fed?
Raising poultry on a large scale for profit.
Poultry raising and its possibilities.

### DRAINAGE.

Drainage as related to road building.
Farm drainage.
Tiling the farm. How? When? Where? Does it pay?
Drainage claims and equitable assessments in drainage district work.
The new Iowa drainage law.
The drainage of meandered lake beds.
Progress in drainage improvements during 1904.
Drainage machinery.
The relation of the soil to underdrainage.

### ROADS.

Good roads and the duties of trustees under the present law.
The importance of drainage in good roads construction.
Iowa roads—Past, present and future.
Road making without money.

### GENERAL.

Should education in rural schools be different from that in city or town schools?

Agriculture in the public schools.

Partners on the farm. To what extent should husband and wife occupy this relation on the farm?

The boys and girls on the farm. Can they receive sufficient education by attending school in the winter only, and how can farm life be made more attractive to them?

What should the farmer do for the rural schools?

Farmers' girls and other girls.

The freight rate problem.

The manufacture of iron and steel—in its relation to agriculture.

Systematic housekeeping.

The farm laborer.

What is a man worth?

How to keep the boys on the farm.

Rural telephones.

Farm machinery.

A B C of rain making.

The age of science.

The relation of the farmer and the business man.

Titles and abstracts of titles.

Preventive waste and loss on the farm.

A practical farm garden.

Woman on the farm.

What patrimony shall we leave our children?

Good farming; clear thinking; right living.

Opportunities of farmers' wives.

Method of renting land.

Common diseases of farm animals.

Will it pay the average young farmer to take an agricultural course?

Existing relations between the farmers and the railroads.

Postal checks, parcel package postage and the catalogue houses.

Value of the Institute to the farmer.

Farmers' co-operative associations.

How should our country schools be managed for the best results?

Poor farms as experiment stations.

Shall cooking be taught in the public schools?

The value of the Interstate Commerce Commission to the Iowa producers.

How can the farmer secure equitable legislation?

What constitutes a successful farmers' institute?

Construction of farm buildings.

What science is doing for agriculture.

Should the institute law be changed?

Benefits of the Iowa State Fair.

The farmers' duty as a citizen, and how he can make his influence felt at primaries.

In what ways can Iowa farmers improve their methods?

Need of a business education for a woman.

By-products.

Stock judging at the county fairs.

Woman as a factor on the farm. As a money-maker; as a money-saver; as a homemaker.

Experiment stations a benefit to the farmer.

The farmer as a machinist.

Precautions to the breeder.

Mutual insurance vs. old line insurance.

Should mutual insurance companies pay full value on live stock?

The relation of the producer, packer and consumer of meat products.

Farm bookkeeping.

The farmer as the unorganized factor in the business world.

Bee keeping.

Culture and influence of flowers

## STATISTICS RELATIVE TO FARMERS'

| Counties. | Where Held. | Date of last institute. | Number of sessions | Total attendance. | Amount of state appropriation received. |
|---|---|---|---|---|---|
| Audubon | Audubon | Feb. 21, 22, 23 | 3 | 130 | $ 24.65 |
| Benton | Belle Plaine | Dec. 16, 17 | 4 | 160 | 73.50 |
| Black Hawk | Waterloo | Feb. 14, 15, 16 | 7 | 1,150 | 75.00 |
| Bremer | Waverly | Feb. 10, 11 | 6 | 500 | 75.00 |
| Buchanan | Independence | Feb. 16, 17, 18 | 3 | 1,375 | 75.00 |
| Butler | Greene | Feb. 7, 8, 9 | 8 | (Not counted) | 75.00 |
| Calhoun | Rockwell City. | Jan. 18, 19 | ...... | ........................ | ........ |
| Carroll | Glidden | Feb. 7, 8 | 6 | 900 | ........ |
| Cedar | West Branch | Dec. 22, 23 | 4 | 650 | 51.25 |
| Cerro Gordo | Mason City | Feb. 16, 17, 18 | 7 | 1,100 | 75.00 |
| Cherokee | Washta | Jan. 19, 20 | 5 | 1,325 | 25.00 |
|  | Cherokee | Feb. 1, 2, 3 | 6 | 2,700 | 50.00 |
| Clayton | Edgwood | Feb. 15, 16, 17 | 6 | 295 each session | 64.05 |
| Dallas | Adel | Jan. 26, 27 | 5 | 1,000 | 50.00 |
| Decatur | Leon | Nov. 16, 17, 18, 19 | 10 | 1,200 | 75.00 |
| Delaware | Manchester | Feb. 1, 2, 3. | 5 | 1,000 | 75.00 |
| Dickinson | Spirit Lake | Feb. 21, 22, 23 | 9 | 1,595 | 75.00 |
| Emmet | Estherville | Jan. 17, 18, 19, 20 | 5 | 1,000 | 67.00 |
| Fremont | Sidney | Jan. 26, 27, 28 | 8 | 1,150 | 75.00 |
| Guthrie. | Guthrie Center | Jan. 19, 20, 21 | 7 | 205 each day | 75 00 |
| Hancock. | Britt | Jan. 25, 26 | 5 | 1,325 | 60.00 |
| Hancock. | Corwith | Feb. 7 | 3 | 825 | 15.00 |
| Hardin | Iowa Falls. | Feb. 14, 15, 16 | 5 | 700 | 29.00 |
| Humboldt | Humboldt, Thor and Bradgate | Jan 18, 19, 20. | 14 | 400 each session | ........ |
| Ida. | Ida Grove | Feb. 1, 2, 3, 4<br>Jan. 31 | ......<br>10 | 700 each day | 75.00 |
| Iowa | Ladora | Jan. 23, 24 | ...... | 1,900 | 75.00 |
|  | North English. | Jan. 24 |  |  |  |
|  | Williamsburg | Feb. 4 | 9 |  |  |
| Jackson | Andrew | Jan. 26, 27 | 6 | 670 | 75.00 |
| Jasper | Newton | Jan. 26, 27, 28 | 5 | 570 | 72.99 |
| Jefferson | Fairfield | Feb. 10, 11 | 5 | 640 | 75.00 |
| Keokuk | Sigourney | July 28, 29<br>Dec. 23 | ...... | 900 each day | 75.00 |
| Kossuth | Algona. | Jan. 18, 19. | 7 | 2,925 | 75.00 |
| Linn | Coggon | Jan. 25, 26. | 5 | 425 each day | 37.50 |
| Louisa | Wapello | Jan. 11, 12. | 6 | 900 | 59.70 |
| Madison | Winterset | March 15-17 | 5 | 260 | 75.00 |
| Marion | Knoxville | Oct. 20, 21, 22 | 6 | 550 each day | 75.00 |
| Mills | Henderson. | Feb. 22, 23, 24 | 7 | 1,800 | ........ |
| Monona | Mapleton | Nov. 25, 26 | 4 | 1,500 | 75.00 |
| Monroe | Albia | Dec. 20, 21, 22 | 7 | 1,550 | 75.00 |
| Osceola | Sibley | Feb. 15, 16 | 3 | 350 each day | 37.05 |
| Page | Shenandoah | Feb. 1, 2, 3 | 7 | 2,500 | 75.00 |
| Palo Alto | Graettinger. | Jan. 18, 19, 20 | 6 | 550 each day | 37.50 |
| Pocahontas | Havelock | Feb. 1, 2, Jan 31 | 8 | 235 each day | 75.00 |
| Polk | Bondurant | Dec. 14, 15, 16 | 5 | 200 each session | 25.00 |
|  | Ankeny | Jan. 17, 18 | 5 | 200 each session | 25.00 |
| Poweshiek | Deep River | Oct. 5, 6 | ...... | 3,400 | ...... |
| Ringgold | Ellston. | March 3, 4, 5 | 7 | 1,300 | 37.50 |
| Sac | Sac City | Dec. 14, 15, 16, 17 | 6 | 1,863 | 75.00 |
| Scott | Eldridge | Jan. 23, 24 | 5 | 1,031 | 75.00 |
| Shelby | Harlan | Jan. 24, 25 | 4 | 750 each session | 74 26 |
| Sioux | Hull | Jan. 10, 11, 12 | 8 | 900 each session | 75.00 |
| Story | Maxwell | Jan. 24, 25, 26 | 12 | 1,908 | 75.00 |
|  | Nevada | Feb. 8, 9 |  |  |  |
| Union | Creston | Nov. 2, 3. | 6 | 220 each session | 75.00 |
| Winnebago | Lake Mills. | Jan. 25, 26, 27 | 6 | 900 each session | 75.00 |
| Worth | Northwood | Jan. 19, 20, 21 | 6 | 1,060 | 75 00 |
| Totals | .................. | .................. | 207 | .............. | $3,090.90 |

INSTITUTES IN IOWA

| Receipts from other sources. | Total expense of institute of 1904. | Number of outside speakers. | Expense of outside speakers. | Time given to outside speakers. | Hold womans' sessions. | Number in attendance at womans' sessions. | Hold exhibition in connection with institute. |
|---|---|---|---|---|---|---|---|
| ......... | $ 71.15 | 2 | $ 10.50 | Greater part | No | ............ | Yes |
| ......... | 73.50 | 4 | 22.50 | Part of both ses'ns | No | ..... ..... | No |
| ......... | 135.00 | 5 | 45.00 | One-third | Yes | 275 | Yes |
| $ 79.75 | (Not giv'n) | 7 | 73.89 | About two-thirds | Yes | 50 | Yes |
| 11.20 | 75.00 | 4 | (Not given) | About two-thirds | Yes | 175 | Yes |
| 51.35 | 115.00 | 9 | (Not given) | About two-thirds | No | ............ | Yes |
| ......... | .......... | ..... | ..... ........ | .... ............ | ...... | .... ...... | Yes |
| ......... | .......... | 3 | $5 a day and exp. | About one-third | Yes | 150 | Yes |
| (Dues $1) | 25.42 | 2 | 36 00 | About one-half | No | ............ | Yes |
| 25.00 | 63 00 | 5 | 60.00 | About two-thirds | Yes | 75 | No |
| 57.90 | 84.50 | 2 | 35.00 | One-third | Yes | 275 | Yes |
| 82.41 | 102.26 | 2 | 28.69 | Half day | No | ............ | Yes |
| ......... | .... .... | 2 | 44.45 | .... ............ .. | No | ............ | Yes |
| 115.00 | 165.00 | 3 | (Not given) | About one-third | No | ............ | Yes |
| ... . | 90.00 | 3 | $10 a day and exp. | About one-half | No | .. .......... | Yes |
| ......... | 65.00 | 2 | 32.50 | About one-half day | Yes | * 20 | Yes |
| 48.10 | 120.00 | 5 | 71.90 | About one-third | Yes | 650 | Yes |
| .... .... | 67.00 | 2 | Only expenses | About one-half | Yes | 250 | Yes |
| 25.00 | .......... | 4 | 75.00 | One h'r each session | Yes | 550 | Yes |
| ......... | 75.00 | 1 | 26.50 | About one-fourth | No | ............ | Yes |
| ......... | 84.57 | 3 | 43.00 | About one-fourth | No | ..... ... .... | Yes |
| 41.00 | .......... | 3 | 27.11 | About one-third | No | ............ | Yes |
| 30.00 | 33.00 | None | .................. | .... .... .. .... ... | Yes | 300 | Yes |
| 6.75 | .......... | 1 | .................. | .... ........... .... | Yes | 150 | Yes |
| 108.70 | 175.00 | 4 | R. R. fare and exp. | About one-fourth | Yes | 200 | Yes |
| 38.00 | 75.20 | 2 | 30.00 | Afternoons | Yes | 400 | Yes |
| 3.15 | 71.12 | 2 | R. R. fare and exp. | Two hours each day | Yes | 40 | Yes |
| 40.00 | 72 99 | 2 | 20.50 | ...... ........... .... | No | ............ | Yes |
| ......... | 75.00 | 2 | $15 to 20 each. | About one-half | No | ............ | No |
| ......... | 115.00 | 5 | .................. | Greater part | Yes | ...... ...... | Yes |
| 143.10 | 74.85 | 4 | 86.00 | About one-half | No | ............ | Yes |
| 6.95 | 38.90 | 2 | 19.00 | About one-fourth | Yes | ............ | No |
| ......... | 72.20 | 2 | .................. | Two hours | No | ............ | No |
| 8.25 | 77.50 | 4 | $25 and expenses | About one-half | No | ... ....... | No |
| 30.00 | 106.45 | 6 | .................. | .......... ... .... | No | ............ | Yes |
| ......... | 34.25 | 1 | 17.25 | Two hours each day | No | ....... | Yes |
| 67.20 | 175.00 | 4 | 92.00 | About one-half | No | ....... ... | Yes |
| ......... | 50.00 | 2 | 24.00 | About one-fourth | No | ...... ...... | Yes |
| ....... . | 35.00 | 2 | 17.00 | Abont one-fifth | No | .... .. ... | No |
| 215.00 | 239.90 | 4 | 66.90 | About one-half | No | .. ....... | Yes |
| 60.00 | 102.00 | 6 | $5 a day and exp. | About one-half | Yes | ............ | No |
| 29.00 | 42.00 | 3 | .................. | .... .... ......... | No | ............ | Yes |
| 90.00 | 50.00 | 4 | Expenses | .......... .... .... | No | ............ | Yes |
| .. ....... | ...... .... | 4 | Expenses | .......... .... .... | ... | ...... .... | Yes |
| 88.50 | .......... | 3 | 41.00 | About three-fo'rths | No | ............ | Yes |
| 10.00 | 55.00 | 3 | 35.00 | About one-fourth | No | ............ | Yes |
| 25.78 | 100.89 | 2 | 35.21 | About one-half | No | ............ | Yes |
| ...... ... | 51.45 | 2 | $5 a day and exp. | .... .... .... | No | ............ | Yes |
| ......... | 74.26 | 3 | .................. | About one-half | No | .... ...... | Yes |
| 70.00 | 129.35 | 5 | 38.00 | About two-thirds | Yes | 250 | Yes |
| 35.25 | 111.00 | 10 | 31.50 | About two-thirds | Yes | 80 | Yes |
| 39.99 | 114.99 | 5 | .................. | About one-half | Yes | 6 | Yes |
| 35 00 | 117.90 | 7 | 70.00 | About three-fo'rths | No | ............ | Yes |
| .... | 60.00 | 1 | $5 a day and exp. | About one-third | Yes | 75 | No |
| $1,717.33 | $ 3,841.60 | 181 | .................. | .... ... ......... | | 3,971 | ..... |

*(Bad weather.)

WALLACES' FARMER

# PART X.

# COUNTY AND DISTRICT AGRICULTURAL SOCIETIES.

## SECTIONS OF LAW GOVERNING COUNTY AND DISTRICT AGRICULTURAL SOCIETIES.*

SEC. 1658. (Code Supplement.) **County societies—Premiums.** County and district agricultural societies may annually offer and award premiums for the improvement of stock, tillage, crops, implements, mechanical fabrics, articles of domestic industry, and such other articles and improvements as they may think proper, and so regulate the amount thereof and the different grades as to induce general competition.

(For annotations see code, page 605.)

SEC. 1659. (Code Supplement.) **List of awards.** Each county and district society shall annually publish a list of the awards, and an abstract of the treasurer's account, in one or more newspapers of the county, with a report of its proceedings during the year, and a synopsis of the awards. It shall also make a report of the condition of agriculture in the county to the board of directors of the state agricultual society, which shall be forwarded on or before the first day of November in each year to the secretary of said society. The auditor of state, before issuing a warrant in favor of such societies for any amount, shall demand the certificate of the secretary of the state society that such report has been made. Any society failing to report on or before the first day of November shall not receive state aid for that year.

(For annotations see code, page 605.)

SEC. 1660 (Code) **Appropriation from county.** When a county agricultural society shall have procured in fee simple, free from incumbrance, land for fair grounds not less than ten acres in extent, or hold and occupy such amount of land by virtue of a lease, and own and have thereon buildings and improvements worth at least two thousand dollars, the board of supervisors of the county may appropriate and pay to it a sum not exceeding one hundred dollars for every thousand inhabitants in the county, to be expended by it in fitting up or purchasing such fair grounds, but for no other purpose; but the aggregate amount so appropriated shall not exceed one thousand dollars to any one society.

SECTION 1661—a (Code Supplement)—**State aid to district or county society—failure to report.**

Any county or district agricultural society, upon filing with the auditor of state affidavits of its president, secretary and treasurer showing what sum has actually been paid out during the current year for premiums, not including races, or money paid to secure games or other amusements, and that no gambling devices or other violations of law were permitted, together with a certificate from the secretary of the state society showing that it has reported according to law, shall be entitled to received from the state treasury a sum equal to forty per cent, of the amount so paid in premiums, but in no case shall the amount paid to any society exceed the sum of two hundred dollars. When any society fails to report, according to law, on or before the first day of November, that society shall not receive a warrant from the state auditor for that year, but the secretary of the state board of agriculture shall notify the county auditor of the county in which such society is located of such failure, and the board of supervisors may appoint a delegate to the annual meeting or state agricultural convention, said delegate to be a resident of said county.

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*See page 96 of this report for law governing representation of societies at the annual agricultural convention.

(For annotations to original section, see code page 605.)

SEC. 1662 (Code). **Reports to supervisors.** Each society receiving such appropriation shall, through its secretary, make to the board of supervisors a detailed statement, accompanied with vouchers, showing the legal disbursement of all moneys so received.

SEC. 1663 (Code). **Permits.** The president of a district or county agricultural society may grant a written permit to such persons as he thinks proper, to sell fruit, provisions, and other articles not prohibited by law, under such regulations as the board of directors may prescribe.

SEC. 1664 (Code). **Police power.** The president of any such society may appoint such number of peace officers as may be necessary, and may arrest or cause to be arrested, any person violating any of the provisions of this chapter, and cause him to be taken before some justice of the peace to be dealt with as provided by law, and he may seize or cause to be seized all intoxicating liquors, wine or beer of any kind, with the vessels containing the same, and all tools or other implements used in any gambling, and remove or causd to be removed all shows, swings, booths, tents, carriages, vessels, boats, or any other thing that may obstruct or cause to be obstructed, by collecting persons around or otherwise, any thoroughfare leading to the enclosure in which such agricultural fair is being held. Any person owning, occupying or using any of such things causing such obstruction, who shall refuse or fail to remove the same when ordered to do so by the president, shall be liable to a fine of not less than five nor more than one hundred dollars for every such offense. During the time the fair is being held, no ordinance or resolution of any city or town shall in any way impair the authority of the society, but it shall have sole and exclusive control over and management thereof.

SEC. 1665. **Fraudulent entries of horses.** No person, partnership, company or corporation shall knowingly enter or cause to be entered any horse of any age or sex under an assumed name, or out of its proper class, to compete for any purse, prize, premium, stake or sweepstake offered or given by any agricultural or other society, association, person or persons in the state, or drive any such horse under an assumed name, or out of its proper class, where such prize, purse, premium or sweepstake is to be decided by a contest of speed.

SEC. 1666. **Penalty.** Any person convicted of a violation of the preceding section shall be imprisoned in the penitentiary for a period of not more than three years, or in the county jail for not more than one year, and be fined in a sum not exceeding one thousand dollars.

SEC. 1667. **Entry under changed name.** The name of any horse, for the purpose of entry for competition in any contest of speed, shall not be changed after having once contested for a prize, purse, premium, stake or sweepstake, except as provided by the code of printed rules of the society or association under which the contest is advertised to be conducted, unless the former name is given.

SEC. 1668. **Class determined.** The class to which a horse belongs for the purpose of an entry in any contest of speed, as provided by the printed rules of the society or association under which such contest is to be made, shall be determined by the public record of said horse in any such former contest.

# REPORTS OF COUNTY AND DISTRICTS AGRICULTURAL SOCIETIES.

## ADAIR.

*W. W. Burrell, Greenfield, Iowa, September 20, 1904.*

Season about three weeks late, but with favorable weather for a few weeks, all crops will be out of danger of frosts.

*Corn*—Fifty per cent of the crop now out of danger of frosts, is of a good quality and will yield from forty to sixty bushels per acre, the balance will require good drying weather for at least two weeks to make a full crop.

*Oats*--Averaged about twenty bushels per acre, and were of good quality and color.

*Wheat*—Very little raised in this county.

*Rye*—An average crop.

*Barley*—None raised.

*Flax*—None raised.

*Buckwheat*—None raised.

*Millet*—Very little raised.

*Sorghum*—An average crop.

*Timothy*—A good crop of hay was secured and cared for in fine condition. The seed averaged from four to eight bushels per acre, of good color, and sold on the market for one dollar per bushel.

*Clover*—Pastures are very good; none cut for hay or seed.

*Prairie Hay*—None raised in this county.

*Potatoes*—Yield good, and of splendid quality.

*Vegetables*—All kinds were of excellent quality, and the production plentiful.

*Apples*—A good crop of fall varieties, but winter varieties not so good.

*Cattle*—In good condition, and pasturage plentiful; a decrease of twenty per cent in numbers being fed from that of last year.

*Horses*—A considerable amount of breeding has been done in the past two or three years, and the number of young horses is increasing.

*Swine*—The crop of pigs last spring was large, and they are in a good healthy condition.

*Sheep*—Generally healthy and doing well. No large flocks in this county.

*Poultry*—A great deal of attention is being paid to this industry, and many of our farmers are selling in large quantities.

*Bees*—Very few raised or kept in this county.

*Drainage*—Generally natural, but some tiling being done.

*Lands*—Prices remain the same as last year, with very little changing hands.

*Report of fair*—Held at Greenfield, September 6th, 7th and 8th. The weather was favorable, and the attendance good. Financially and otherwise, the fair was a success. Exhibits were large in every department, and splendid in quality. The exhibit of hogs was exceptionally good, as was also that of horses. Displays of vegetables, flowers, and fruits were unsurpassed in the history of this organization.

## ADAMS.

*J. M. Devore, Corning, Iowa, September 23, 1904.*

*General condition of crops*—Small grains below average, owing to excessive rainfall in early part of season.

*Corn*—Yield will average about forty bushels per acre. None raised on very low bottom lands.

*Oats*—Averaged about twenty-five bushels per acre; straw very heavy.

*Wheat*—A failure, owing to excessive rainfall.

*Rye*—Very little grown in this county.

*Barley*—Not much grown; yield good; averaged about thirty-five bushels per acre.

*Flax*—None grown.

*Buckwheat*—None grown.

*Millet*—Not much grown; medium crop.

*Sorghum*—None planted.

*Timothy*—Very good; a considerable amount harvested for seed, which averaged about nine bushels per acre.

*Clover*—Pastures good; none cut.

*Prairie hay*—None grown.

*Potatoes*—Early ones yielded well, but late ones not so good. None for export.

*Vegetables*—Very good.

*Apples*—Summer and fall varieties abundant and of good quality; only a fair crop of winter varieties.

*Other fruits*—Plum and peach trees did not bear well; all other fruits good.

*Cattle*—In good condition, owing to pasturage being fine all season.

*Horses*—Good grade raised in county; many carloads shipped during the year.

*Swine*—In healthy condition, but not quite so numerous as former years owing to scarcity of corn from crop of 1903.

*Poultry*—In healthy condition and being raised extensively.

*Bees*—Honey crop, early part of season, good; not doing quite so well this fall.

*Drainage*—Rolling land; drainage good.

*Lands*—Prices range from thirty to ninety dollars per acre.

*Fair*—Held at Corning, August 22d, 23d, 24th and 25th.

## ALLAMAKEE.

*J. C. Crawford, Waukon, Iowa, October 31, 1904.*

*Condition of crops the past season*—Were fairly good.

*Corn*—Good, medium and fair.

*Oats*—Good.

*Wheat*—Not very much grown; quality and yield, fair.

*Rye*—Good.

*Barley*—Excellent.

*Flax*—Good.

*Buckwheat*—Very little grown in this county.

*Millet*—Good.

*Sorghum*—Good.

*Timothy*—Good.

*Clover*—Good.

*Prairie hay*—None grown

*Potatoes*—Excellent.

*Vegetables*—Were very good

*Apples*—Good.

*Other fruits*—Very good.

*Cattle*—Done well.

*Horses*—Doing well.

*Swine*—Doing well.

*Sheep*—In good condition; no disease.

*Poultry*—An industry which is being given a great deal of attention, and pure bred types are being raised extensively.

*Bees*—Did well this season.

*Drainage*—Natural and good.

*Other industries*—Dairing is receiving considerable attention.

*Lands*—Range in price from $25 to $150 per acre.

*Report of fair.*—Held at Waukon, September 13th, 14th, 15th and 16th, and was a success in every particular. The vegetable display was excellent. Corn was not sufficiently matured at the time to make a large display, but there was some good early varieties shown. All other departments were well filled, and the displays were excellent. There is an increased interest in the county fair, as farmers are beginning to realize that much can be learned by attending and taking part in them.

## AUDUBON.

*O. B. Train, Audubon, Iowa, September 5, 1904.*

*General condition of crops and season*—Crops have been reasonably good, although the season has been cold and backward.

*Corn*—Is in good condition, and will yield, on an average, about fifty bushels per acre.

*Oats*—Yielded from thirty-five to forty bushels per acre, and over-ran in weight.

*Wheat*—Blue stem yielded about seventeen bushels per acre, and was of fair quality. All bearded varieties were an entire failure, and was not cut.

*Rye*—Little, if any, raised.

*Barley*—Was damaged a great deal by rust, but averaged about thirty bushels per acre.

*Flax*—None raised.

*Buckwheat*—Practically no attention paid to this.

*Millet*—Good.

*Timothy*– Good crop and harvested in nice condition.

*Clover*—Fair; somewhat winter killed.

*Paririe hay*—Very little of it left in this county, but a good yield.

*Other grains and grasses*—Rape is getting to be quite extensively raised.

*Potatoes*—Quality as fine as ever seen and yielded from one hundred and fifty to two hundred bushels per acre.

*Vegetables*—Good.

*Apples*—Fair crop; coddling moth did some damage.

*Other fruits*—Blackberries, none raised; raspberries, small crop; grapes, fair; cherries, good; gooseberries, good; currants, fair; plums, excellent, both in quality and yield.

*Cattle*—About thirty-four thousand head in county, all of which are in good condition.

*Horses*—Including all classes and ages there is about ten thousand in this county. Demand and prices are good.

*Swine*—A good crop of young pigs, but hogs ready for market are scarce. There is a number of herds of pure-bred Duroc Jersey, Chester White and Poland Chinas.

*Sheep*—An industry that does not receive the attention it should in this county, there being a total of only about sixteen hundred head.

*Poultry*—This industry is becoming more and more extensively handled, as people realize that it is one of the most substantial incomes of the farm.

*Bees*—Not many of them raised or kept in this county, but have done well this year.

*Drainage*—Mostly natural, but lots of tiling being laid where there are low wet places.

*Lands*—Rolling; wooded along streams; very productive; clay subsoil. Prices range from $50 to $80 per acre.

*Report of fair*—Held at Audubon, August 30th, 31st, September 1st and 2d. The weather was a little threatening, which kept away some of the people, but after all the attendance was good, and the society paid all premiums in full and has a balance in the treasury. The races were good, everyone seemed well pleased.

The swine department was well filled with some of the best swine in western Iowa, and everybody felt proud of this exhibit.

The horse barns were well filled, and the animals shown were as fine as ever seen in this county.

The exhibit in our cattle department was very light, although there are numerous herds of thoroughbreds in this county.

The poultry exhibit was not very large, owing to the accommodations in this department being poor. However, the society expects to erect a new poultry house the coming season, which will no doubt bring out a large exhibit in this department another year.

The fine arts, pantry and kitchen stores, agriculture and horticulture departments were well filled, with excellent exhibits.

## BENTON.

*Geo. D. McElroy, Vinton, Iowa, October 14, 1904.*

The general condition of crops in this section are on a fair average with those of former years.

*Corn*—Yield will average about forty-five bushels per acre, about ten per cent of which will be effected by frost.

*Oats*—Yielded about thirty-five bushels per acre and were of good quality.

*Wheat*—Not much raised in this county.

*Barley*—Yielded on an average about twenty-five bushels per acre, and of a good quality.

*Sorghum*—An average crop.

*Timothy*—Good.

*Clover*—Good.

*Potatoes*—Large crop and of good quality.

*Vegetables*—Good.

*Apples*—Large yield.

*Other fruits*—Yielded well.

*Cattle*—Not many being fed in this vicinity.

*Horses*—Good prices being paid, and a great many being shipped.

*Swine*—Have done well, and there is a large increase in numbers.

*Sheep*—Not many in this county.

*Poultry*—A growing industry; large numbers being shipped.

*Bees*—Very poor.

*Drainage*—A large amount of tiling being laid.

*Other industries*—The growing of sweet corn for canning purposes is an extensive industry in this county, the several companies putting up over ten millions cans the past season.

*Lands*—Range in price from $75 to $125 per acre.

*Report of fair*—Thirty-third annual exhibition, held at Vinton, September 13th, 14th and 15th. The weather was favorable, and the fair was a success in every particular, the attendance being up to the average of former years.

The races did not fill, owing to the smallness of our purses and the number of fairs held on the same dates in our immediate vicinity.

Entries in all departments, with the exception of swine, were well filled, there being nearly one thousand entries in the agricultural department.

## BLACK HAWK.

*B. L. Manwell, La Porte City, Iowa, October, 15, 1904.*

*Corn*—An average crop; some extra good, while that planted on low ground and late is injured to some extent by frost.

*Oats*—Not a large yield, but the best quality produced in years.

*Wheat*—Very little raised, but of fine quality.

*Rye*—Not much sown, but of an average yield.

*Barley*—Good quality and yield.

*Flax*—None raised.

*Buckwheat*—Very little raised.

*Millet*—Not much sown this year, as it is a crop that is usually raised on land where other crops have drowned out.

*Sorghum*—Very little grown.

*Timothy*—About two-thirds of a crop; very little seed saved.

*Clover*—An average crop.

*Prairie hay*—Not much grown, but of good quality, as most of this crop is harvested from sloughs, which were dry this year.

*Potatoes*--The best crop for years.

*Vegetables*—Good.

*Apples*—Summer and fall varieties yielded well and of good quality; very few winter apples grown.

*Other fruits*—Yielded on an average with former years.

*Cattle*—Average number and are in good condition. There is not much of a demand for feeders, and prices are not so good as last year.

*Horses*—Good ones are scarce and prices range high.

*Swine*—About the average number raised; very little disease.

*Sheep*—Very few kept or raised.

*Poultry*—An average with former years both in quality and numbers raised.

*Bees*—Not many raised, and honey crop was not up to last year, which was a record breaker.

*Drainage*—A great deal of attention is being paid to this, and a large amount of tiling is being laid.

*Other industries*—The creamery and canning factory are very important industries, the creamery being conducted on the co-operative plan. The canning factory put up over two million six hundred thousand cans of sweet corn during the past season, for which the farmers receive $5 per ton. The yield was large the past year, and was the most profitable one raised.

*Lands*—The prices range from sixty to one hundred and ten dollars per acre, but very little changing hands.

*Report of fair*—Held at La Porte City, September 6th, 7th, 8th and 9th. The fair was a success financially and otherwise, all departments being well filled, and that of horses surpassing all former records.

## BOONE.

*F. W. Thomas, Ogden, Iowa.*

*Corn*—Yield will range from forty to fifty bushels per acre, 80 per cent of which was undamaged by frost.

*Oats*—Yielded from twenty-five to thirty-five bushels per acre, and tested twenty-nine pounds to the measured bushel.

*Wheat*—Not much raised, but was of good quality.

*Rye*—Very little raised; quality, good.

*Barley*—None raised.

*Flax*—None raised.

*Prairie hay*—A good crop, and selling at from $3.50 to $5 per ton.

*Potatoes*—A large crop; selling at twenty cents per bushel.

*Apples*—Yield and quality good; three carloads of summer and fall, and two carloads of winter apples shipped out.

*Cattle*—A great number being fed for beef.

*Horses*—Heavy drafts very scarce owing to large number being bought for shipment. Prices range from $125 to $200 per head for animals weighing from fourteen hundred to sixteen hundred pounds.

*Swine*—No disease among them. Thoroughbred Duroc Jerseys, Chester Whites and Poland Chinas raised extensively.

*Sheep*—Not many kept or raised.

*Lands*—Very little changing hands; prices range from $75 to $100 per acre.

*Report of fair*—Held at Ogden, September 14th, 15th and 16th. Favorable weather prevailed throughout the days of the fair (for the first time during the past seven years) and it was a success, both in point of exhibits and financially.

The exhibits were on an average with former years, with the exception of that in the horse department, which surpassed all former exhibits.

The society erected a new cattle barn during the past season, dimensions of which are 24 by 80 feet; also a new sheep barn, 24 by 50 feet. These improvements filled a long felt want and were appreciated by the stock men. The cost of these buildings was $375.

## BUCHANAN.

*C. W. Stites, Independence, Iowa, September 24, 1904.*

The general condition of crops the past season have been better than for several years, owing to the season being much more favorable to the agriculturist, upon whose success so much depends.

*Corn*—While the larger proportion of the crop is of good quality and will yield well, that which was planted late and on low lying land was damaged somewhat by a heavy frost on September 11th.

*Oats*—Quality generally very good and yielded from twenty-five to thirty-five bushels per acre; price 28 to 30 cents.

*Wheat*—Very little wheat is being raised in this county. A good quality can be produced when mixed with oats.

*Rye*—Acreage small; quality good.

*Barley*—Acreage small.

*Buckwheat*—Acreage small; quality good.

*Millet*—Acreage small; quality good.

*Sorghum*—Acreage small; quality good.

*Timothy*—Yield and quality exceptionally good, and selling at from $5 to $6 per ton.

*Clover*—Very little grown.

*Prairie hay*—Quality good, and selling at from $4 to $5 per ton.

*Potatoes*—An abundant crop and of fine quality; selling at from 20 to 25 cents per bushel.

*Vegetables*—Plentiful and of good quality.

*Apples*—Crop larger and of better quality than for many years.

*Other fruits*—Have done exceedingly well.

*Cattle*—While feeding for beef has not been very profitable to the farmer the past two years, the usual number are being fed.

*Horses*—Quality is fast improving in this county.

*Swine*—Are doing well, and are mostly thoroughbred Poland China Duroc Jersey and Chester White breeds.

*Sheep*—Medium wool seem to be the favorite breed. Farmers are beginning to realize that there is good profit in this industry.

*Poultry*—Barred Plymouth Rock chickens are seemingly the favorite breed. Turkeys and ducks were raised in abundance, and for which good prices are being obtained.

*Bees*—Plentiful, and honey is of good quality.

*Drainage*—Natural drainage generally very good, but some tiling is being laid.

*Lands*—Rich, sandy loam. Prices range from fifty dollars to one hundred dollars per acre.

*Report of fair*—The thirty-second annual exhibition, was held at Independence, September 6th, 7th, 8th and 9th. While the association does not wish to be boastful they feel most grateful for the liberal patronage from this and adjoining counties, the result of which is that we now have a balance to the credit of the association.

## BUENA VISTA

*C. E. Cameron, Alta, Iowa, September 25, 1904.*

The season has been very favorable and crops generally have been very good.

*Corn*—The prospects are at this writing that we will have the best crop had in four years, there being a good stand, well eared and well filled. Some of that which was planted on low lying land did not do well, owing to the exceptionally wet spring.

*Oats*—Yielded from thirty to fifty bushels per acre, and were of extra good quality.

*Wheat*—Of poor quality, and yielded from three to fifteen bushels per acre.

*Rye*—Very little raised.

*Barley*—Yielded from twenty-five to thirty bushels per acre, and of fair quality. A rain just before harvest did some little damage in coloring it.

*Flax*—None raised.

*Buckwheat*—Very little raised.

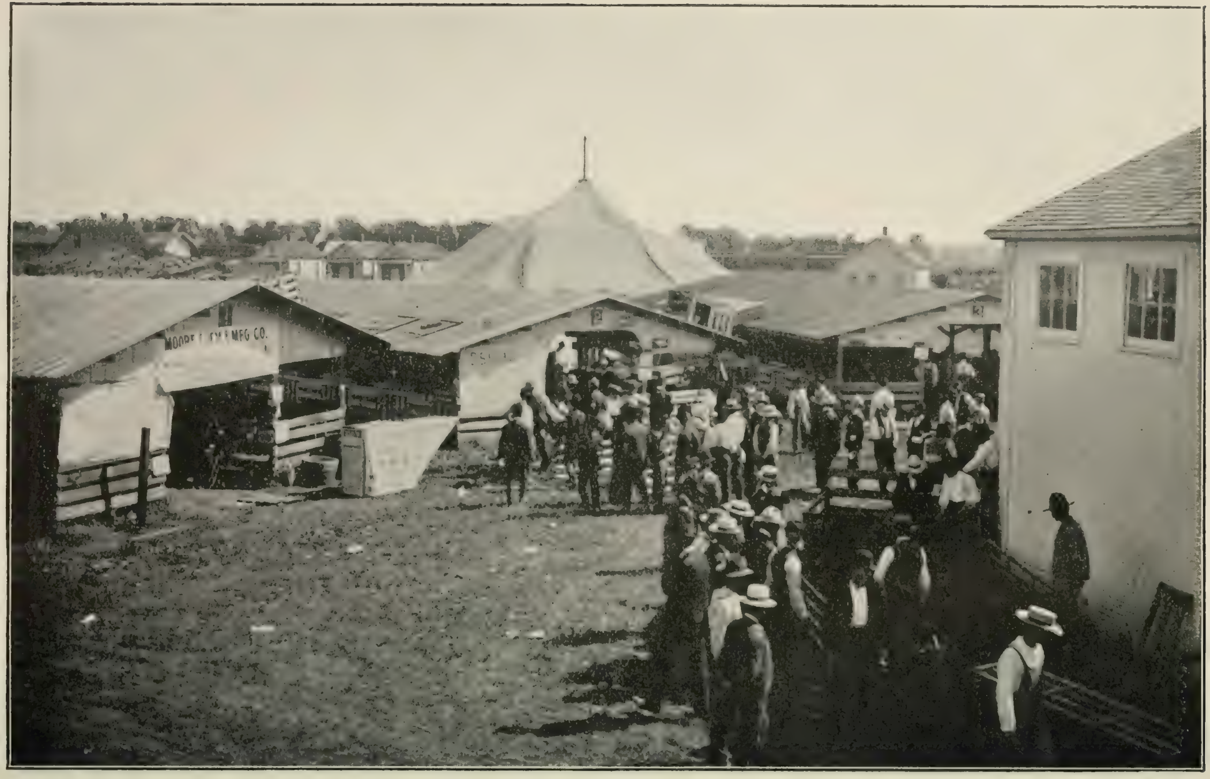
*Millet*—Fair crop.

*Sorghum*—Fair crop.

*Timothy*—Extra good quality, yielded from two to three tons per acre.

*Clover*—Some frozen out; a very good prospect for a fair crop of seed.

*Prairie hay*—Very little left in this county, but a good crop.



“Down among the Hog Barns,” Iowa State Fair, 1904.

*Potatoes*—Yielded from one to two hundred bushels per acre, and are of excellent quality.

*Vegetables*—Excellent both in quality and yield.

*Apples*—Good.

*Cattle*—About the usual number raised; quality is getting better each year.

*Horses*—Owing to the great number that have been shipped out during the past three years there are very few good ones left.

*Swine*—Are in a healthy condition, but not so many raised as last year.

*Sheep*—Very few raised.

*Poultry*—About the usual number and quality.

*Bees*—Done well.

*Drainage*—Farmers beginning to realize the importance of tiling and there is a great deal being laid.

*Lands*—Range in price from $75 to $125 per acre.

*Report of fair*—Held at Alta, August 16th, 17th, 18th and 19th. Entries in all departments was on an average with former years, except in the display of corn which was light, owing to the early dates on which the fair was held. The exhibits in the cattle and swine department surpassed all former exhibits, both in quality and numbers shown. Although we were unfortunate in having two days of unfavorable weather during the fair our total receipts were greater than ever before in the history of the society.

For years we have been giving a fifty-cent fair for twenty-five cents, and having a good attendance, but in spite of this our receipts were not equal to our disbursements, so it was decided to increase the general admission this year to thirty-five cents, giving visitors a return check where they wished to leave the grounds and come back the same day. The new system proved very satisfactory and we believe that if all county fairs would adopt it, and at the same time increase the quality of their entertainments, that they would be generally more successful.

All classes in our speed department were well filled, and every race was well contested, which pleases the visitors at our fair.

## BUTLER.

*J. W. Ray, Allison, Iowa, September 19, 1904.*

*Corn*—Maturing rapidly; indications for a good crop.

*Oats*—Good quality; yield not quite up to average.

*Wheat*—None raised.

*Rye*—Acreage small; yield and quality good.

*Barley*—Very good crop; acreage small.

*Flax*—Very good crop; acreage small.

*Buckwheat*—Indications for a good crop; small acreage.

*Millet*—None raised.

*Sorghum*—None raised.

*Timothy*—Good quality; average yield.

*Clover*—Last years seeding good; other poor.

*Prairie hay*—Quality good; average yield.

*Potatoes*—Quality good; average yield.

*Vegetables*—Excellent both in quality and yield.

*Apples*—Excellent yield.

*Other fruits*—Yielded well.

*Cattle*—A few herd of Shorthorns, Herefords and Polls. Many of the farmers are improving the breeds of their cattle by using pure bred bulls. Not so many cattle being fed for beef as usual, but are in good condition.

*Horses*—Principal breeds are Norman, Clydesdale, English Drafts and grades. There is a general improvement in horses of all kinds, and farmers are giving more attention to the raising of draft colts.

*Swine*—Breeds represented are Poland Chinas, Chester Whites and Duroc Jerseys. All hogs are in a healthy condition, and there is the usual number to be marketed.

*Sheep*—Very few raised.

*Poultry*—A very profitable industry in this county, and many are shipped out each year.

*Drainage*—A great deal of tiling being laid.

*Other industries*—Dairying is carried on extensively, and was exceptionally profitable this year owing to the excellant pasturage.

*Lands*—Range in price from $60 to $90 per acre.

*Report of fair*—Held at Allison, August 30th, 31st, and September 1st, and was a success financially and otherwise.

Exhibits in the various departments were well filled, and that of the stock department exceeded any of former years. The attendance was good, considering the inclemency of the weather, and there seemed to be more interest taken in the fair as a whole than has ever been shown before.

## CALHOUN.

*Thos. Griffin, Manson, Iowa, September 20, 1904.*

The general condition of the crops have been fair, although the season has been somewhat late and wet.

*Corn*—Average crop.

*Oats*—Yielded on an average about fifty bushels per acre.

*Wheat*—Very little raised in this county, and was of poor quality and yield.

*Barley*—Good.

*Buckwheat*—Good.

*Timothy*—Excellent.

*Clover*—Good.

*Prairie hay*—Good.

*Potatoes*—Fair.

*Vegetables*.—Good.

*Apples*—A very large crop and of good quality.

*Other fruits*—Good.

*Cattle*—Are in good condition.

*Horses*—Are doing well and there is a noticeable improvement in their breeding

*Swine*—Good.

*Sheep*—Good.

*Poultry*—On an average with former years in quality and numbers raised.

*Bees*—Done well.

*Drainage* The natural drainage is not very good, and there is a great deal of tiling being laid.

*Lands*—Prices remain the same as last year.

*Report of fair*—Held at Manson, August 31st and September 1st, and was a success in every particular; the weather being favorable and the attendance good.

## CEDAR.

*L. J. Rowell, Tipton, Iowa, September 28, 1904.*

The general condition of crops the past season has been fine.

*Corn*—Acreage planted was large, and the crop will be a record breaker.

*Oats*—Yielded well, and of good quality; the best crop had for years.

*Wheat*—Very little raised.

*Rye*—Not much raised, but was of good quality and yield.

*Barley*—A large yield and of good quality.

*Flax*—None raised.

*Buckwheat*—Very little raised.

*Millet*—None raised.

*Sorghum*—Very little raised.

*Timothy*—An excellent crop and a good market.

*Clover*—Most of it was winter-killed.

*Prairie hay*—None grown.

*Other grains and grasses*—Were good.

*Potatoes*—A large yield, and of excellent quality.

*Vegetables*—Were very good both in quality and yield.

*Apples*—A good crop, both in quality and yield.

*Other fruits*—Were plentiful and of good quality.

*Bees*—Did not do very well this year, owing to cold season.

*Report of fair*—Held at Tipton, August 30th, 31st, September 1st and 2d, and was a success in every particular, except financially. The rain cut down the attendance somewhat, but all premiums were paid in full. Our attractions, among which were good racing and baseball games each day, were such that pleased the people attending the fair.

The exhibit in the art hall of the handiwork of the ladies was very attractive, and the hall was filled to overflowing. Some of our merchants fitted up handsomely decorated booths in which were displayed in a pleasing form their most attractive wares. The hall was very beautifully decorated and was a favorite resort of all during the fair.

The farmers did their share to make the fair the best ever held, the exhibits of horses, cattle, swine, sheep and agricultural products being the finest ever shown.

*Horses*—In this department the exhibit was as fine as could be found in the State, the principal breeds shown being German and French coachers, English drafts and roadsters. The horse industry is a growing one in this county.

*Cattle*—The exhibit in this department was fine, several good herds being shown, all of which were owned in this county.

*Swine*—There was a marked improvement in this exhibit over former years, both in quality and numbers shown.

*Sheep*—An excellent exhibit, the principal breeds shown being Cotswold and Shropshire Downs. A large number of farmers have been giving this industry their attention, and there is a noticeable increase in the numbers raised.

*Poultry*—There was a much larger exhibit in this department than in former years.

*Farm products*—The exhibits were excellent, especially in apples, other fruits and vegetables.

## CHICKASAW.

*L. E. Eck, Nashua, Iowa, October 24, 1904.*

The general condition of crops and the season has been very good, compared with that of the last two years, and crops as a whole are excellent.

*Corn*—Will yield from twenty-five to sixty bushels per acre, and is of good quality, there being little soft corn.

*Oats*—Yielded from twenty to fifty bushels per acre.

*Wheat*—Very little raised, but yield and quality was good.

*Rye*—A very good crop, averaging about twenty-five bushels per acre.

*Barley*—Quality good, and yielded from twenty-five to forty bushels per acre.

*Flax*—Very little raised, but had a fair yield.

*Buckwheat*—Good yield.

*Millet*—Fair yield.

*Sorghum*—Very good.

*Timothy*—Fair.

*Clover*—Good.

*Prairie hay*—Yielded from one to two tons per acre.

*Potatoes*—Yield and quality above the average.

*Vegetables*—Very good both in quality and yield.

*Apples*—An abundant crop and of good quality.

*Other fruits*—Were good.

*Cattle*—All farms are well stocked, and a number are being fed for beef.

*Horses*—Are on an average with former years.

*Swine*—A great number raised and are in a healthy condition.

*Sheep*—Very few kept or raised.

*Poultry*—Done well.

*Bees*—Did fairly well.

*Drainage*—Good.

*Lands*—Selling at from $40 to $80 per acre.

*Report of fair*—Held at Nashua, August 30th, 31st, September 1st and 2d. The attendance was very good, and the fair was a success in every particular. The exhibits of horses, cattle and swine surpassed that of all previous years.

## CLAYTON.

*Henry Luehsen, Garnavillo, Iowa, September 21, 1904.*

The general condition of crops and the season has been very good.

*Corn*—In general will yield about eighty-five per cent of a full crop, and if frosts do not interfere some of it will do better. That which was late planted will not yield more than seventy per cent of a crop.

*Oats*—A good crop both in yield and quality.

*Wheat*—Very little raised. Spring wheat was a total failure, while the winter variety is about fifty per cent of a crop.

*Rye*—Very little raised.

*Barley*—The best crop for many years, yield and quality being good.

*Flax*—None raised.

*Buckwheat*—None raised.

*Millet*--Very little raised.

*Sorghum*—An average yield.

*Timothy*—About two-thirds of a crop; some going a little better.

*Clover*—The greater part of it was frozen out last winter.

*Prairie hay*—Will average about two-thirds of a crop.

*Potatoes*—The best raised for many years, the yield and quality being good.

*Vegetables*—In general were never better.

*Apples*—Will average about two thirds of a crop of both early and late varieties.

*Other fruits*—Were not up to the average, yielding only about two-thirds of a crop.

*Cattle*—Are in good condition and of a high grade. The leading breeds are Shorthorns, Herefords, Polled Angus, Galloways and Jerseys.

*Horses*—Farmers are raising them more extensively, the different breeds represented being Percherons, Belgians, French Drafts, Clydesdale and English Shires.

*Swine*—One of the principal industries of this county, there being some choice herds of Poland Chinas, Berkshires, Chester Whites, Duroc Jerseys and Yorkshires.

*Sheep*—Are being extensively raised, some herds containing from one hundred and fifty to two hundred head.

*Poultry*—A business which is flourishing, as farmers realize that it is a very profitable industry. A great many thoroughbred birds are being raised.

*Bees*—Honey crop was not up to the average of former years on account of the poor clover crop.

*Drainage*—Good natural drainage.

*Lands*—Range in price from $80 to $100 per acre, but none is for sale. Some rough land is priced at from $25 to $50 per acre.

*Report of fair*—The forty-fourth annual exhibition was held at National, September 6th, 7th, 8th and 9th, and it was a success in every particular. The weather was favorable and the exhibits exceeded those of any former years, there being over thirty-five hundred entries. All departments were well filled; the races were good, and the track record was lowered to 2:16.

The attendance was the largest in the history of the society, there being about eight thousand in attendance on Thursday, September 8th.

## CLAYTON.

*J. A. Kramer, Elkader, September 25, 1904.*

Crops have been generally good, although the season has been a little dry and cool.

*Corn*—Generally very good; that on the low lands damaged some by frost.

*Oats*—Good, both in yield and quality.

*Wheat*—Very little raised and of poor quality.

*Rye*—Very little raised, but was of fair quality.

*Barley*—Yield and quality good.

*Flax*—None raised.

*Buckwheat*—None raised.

*Millet*—None raised.

*Sorghum*—Yield and quality not very good, owing to season being too dry.

*Timothy*—A very good crop.

*Clover*—The greater part of it was froze out last winter.

*Prairie hay*—None raised.

*Potatoes*—Of excellent quality and yield, being the largest crop raised in years.

*Vegetables*—All varieties were a little late, but of good quality.

*Apples*—An excellent crop both in quality and yield.

*Other fruits*—Done well.

*Cattle*—There is a noticeable improvement in the grade of breeding stock. Not very many fed for beef in this section.

*Horses*—Are not raised very extensively, but are of good grades.

*Swine*—A great many were raised this year, and are in a healthy condition. There are a large number of breeders of pure bred Poland Chinas, and Duroc Jerseys.

*Sheep*—Not many kept or raised, but are of good breeding.

*Poultry*—Raised extensively and have been very profitable this year owing to the high price of eggs.

*Bees*—Did not do well.

*Drainage*—Very good natural drainage.

*Lands*—Prices range about the same as last year, but none is for sale.

*Report of fair*—Held at Elkader, August 23d, 24th, 25th and 26th, and was a success in every particular. The weather was favorable, and the attendance was good. The cattle and swine departments were filled to overflowing. Exhibits in other departments were up to the average, except that in the horse department which was very light. No fakes or shows were allowed on the grounds, and it was the cleanest fair ever held.

## CLAYTON.

*B. Cooley, Strawberry Point, Iowa, October 25, 1904.*

The season has been backward, wet and cold, but crops have done fairly well.

*Corn*—An average crop in quality and yield.

*Oats*—A fair yield and quality good.

*Wheat*—None raised.

*Rye*—Average crop.

*Barley*—Above the average both in quality and yield.

*Flax*—None raised.

*Buckwheat*—Average crop.

*Millet*—Average crop.

*Sorghum*—Average crop.

*Timothy*—Yielded well and was put up in good condition.

*Clover*—The greater part of it was froze out last winter.

*Prairie hay*—None raised.

*Potatoes*—Extra good.

*Vegetables*—Extra good.

*Apples*—An excellent crop of fall varieties.

*Other fruits*—Did well.

*Cattle*—Are in fair condition.

*Horses*—Are in good condition.

*Swine*—Average number raised, and will be ready for market the latter part of December.

*Sheep*—Not many kept or raised.

*Poultry*—Did well.

*Bees*—Are doing well and have gathered a good crop of honey.

*Drainage*—All land is well drained.

*Other industries*—Dairying is receiving a great deal of attention.

*Lands*—Prices are a little lower than last year.

*Report of fair*—Held at Strawberry Point, August 30th, 31st, September 1st and 2d.

## CLINTON.

*Phil. Butterfield, De Witt, Iowa, October 21, 1904.*

The general condition of crops has been very good, although the season has been a little cold and backward.

*Corn*—A good crop both in quality and yield; will average about forty bushels per acre.

*Oats*—Yielded well and of good quality; very little rust.

*Wheat*—Very little raised.

*Rye*—Yielded well and of good quality.

*Barley*—Yielded well and of good quality.

*Flax*—None raised.

*Buckwheat*—None raised.

*Sorghum*—None raised.

*Timothy*—A light crop, but was put up in excellent condition.

*Clover*—The greater part of it was frozen out last winter.

*Prairie hay*—A fair yield, and put up in excellent condition.

*Potatoes*—An excellent crop, both in quality and yield.

*Vegetables*—Good.

*Apples*—A large yield.

*Other fruits*—Did fairly well.

*Cattle*—Are doing well, but not so many being fed for beef as last year.

*Horses*—Prices good, but not many for sale.

*Swine*—A large number raised, and are in a healthy condition.

*Sheep*—Very few kept or raised.

*Poultry*—Raised extensively, and are bringing high prices.

*Drainage*—A great deal of tiling being laid.

*Lands*—Range in prices from $75 to $95 per acre.

*Report of fair*—Held at De Witt, September 13th, 14th, 15th and 16th. Although the weather was unfavorable the first two days of the fair the attendance on the whole was very good, and as the exhibits in all departments were good, the fair was pronounced a success in every particular.

## CLINTON.

*J. B. Ahrens, Lyons, Iowa, September 10, 1904.*

The general condition of the crops has been very good, although the season has been somewhat backward.

*Corn*—Indications at this time are that the crop will be a record breaker, both in yield and quality.

*Wheat*—Very little raised in this county, but was of good quality and yield.

*Rye*—Yielded well, and of good quality.

*Barley*—An excellent yield, and of good quality.

*Flax*—None raised.

*Buckwheat*—None raised.

*Millet*—Very little raised.

*Sorghum*—Very little raised.

*Timothy*—An average crop.

*Clover*—The greater part of it frozen out last winter,

*Prairie hay*—None raised.

*Potatoes*—An excellent yield and of good quality.

*Vegetables*—Good.

*Apples*—Were plentiful.

*Other fruits*—Were plentiful.

*Cattle*—Of good grade, and a great number are being fed for beef.

*Horses*—Principally draft breeds raised, for which there is a ready sale at good prices.

*Swine*—Large numbers raised, and are in healthy condition.

*Sheep*—Very few kept or raised.

*Poultry*—Large numbers raised, and are bringing good prices.

*Lands*—Prices range from $75 to $110 per acre.

*Report of fair*—Held at Clinton, September 6th, 7th, 8th and 9th. Favorable weather prevailed and the attendance was good, as was also the exhibits in every department.

## DALLAS.

*H. H. Crenshaw, Adel, Iowa, September 15, 1904.*

Crops in general have been very good the past season.

*Corn*—Is of excellent quality and will yield well.

*Oats*—Yielded from thirty-five to forty bushels per acre, and were of good quality.

*Wheat*—Very poor grade.

*Rye*—None raised.

*Sorghum*—A fair crop.

*Timothy*—Good.

*Clover*—Good.

*Prairie hay*—None raised except in the sloughs, and this yielded a very good crop.

*Potatoes*—An excellent crop.

*Vegetables*—Very good.

*Apples*—Yielded well and were of good quality.

*Other fruits*—Were good.

*Cattle*—Are in good condition. One steer exhibited at our fair, and which was raised in the county, weighed thirty-three hundred pounds.

*Horses*—There is a marked improvement in the grade of horses being raised, the trend being toward the roadster class.

*Swine*—A great many raised and are in a healthy condition; Poland Chinas and Duroc Jerseys are the leading breeds.

*Poultry*—A great many chickens raised, but turkeys not so plentiful.

*Bees*—An industry that is steadily growing in this vicinity.

*Drainage*—Is very good.

*Lands*—Range in prices from seventy-five dollars to one hundred dollars per acre.

*Report of fair*—Held at Adel, September 7th, 8th and 9th. Favorable weather prevailed, the attendance was good, as was also the exhibits in every department, and the fair was pronounced a success in every particular.

## DAVIS.

*J. C. Brouhard, Bloomfield, Iowa, October 8, 1904.*

Crops in general have been very good, although the season has been somewhat backward.

*Corn*—An excellent crop both in quality and yield.

*Oats*—Owing to the weather being cold and wet at seeding time there was not a very good stand and the yield was light, but quality is exceptionally good.

*Wheat*—Only winter variety raised, which yielded well and was of good quality.

*Rye*—Is not raised extensively; generally sown as nurse crop for timothy; yielded from fifteen to thirty bushels per acre, and was of good quality.

*Barley*—None raised.

*Flax*—None raised.

*Buckwheat*—Very little planted the past season but yielded well and was of good quality.

*Millet*—Very little sown, but yielded well both in hay and seed.

*Sorghum*—None raised for feeding purposes; used only in the manufacture of molasses.

*Timothy*—An excellent yield both in hay and seed.

*Clover*—Sown principally with timothy.

*Prairie hay*—A very good crop of slough hay; there is no upland prairie hay in this county.

*Potatoes*—The average acreage planted, which yielded twenty per cent above the average crop and were of good quality.

*Vegetables*—Good.

*Apples*—A large yield and of good quality.

*Other fruits*—Were excellent both in quality and yield. No peaches raised.

*Cattle*—Have done well; principal breeds raised are, Shorthorns, Herefords, Aberdeen-Angus and Jersies.

*Horses*—The grade is constantly improving, the larger breeds are preferred, although some are breeding light harness classes.

*Swine*—Have been free from disease the past season. Poland Chinas and Duroc Jerseys are the principal breeds raised, with some few Berkshires.

*Sheep*—Not generally raised, although there is a few large herds of purebred sheep in the county.

*Poultry*—One of our leading industries, and it is estimated that money received from this source is greater than that received from the sale of hogs in this county.

*Bees*—Done very well during the white clover season, but having swarmed heavily and the latter part of the season being very cool they stored but little honey.

*Drainage*—Very little done, the natural drainage being very good.

*Other industries*—Are flour mills, poultry farms, pressed brick and tile factory. Coal is found in paying quantities, but is not mined extensively, owing to railroad facilities being poor.

*Lands*—Generally of black loam, and unsurpassed in fertility.

*Report of fair*—Held at Bloomfield, September 14th, 15th, 16th and 17th, the same being postponed one day from the regular dates set, owing to rain. The fair was a success in every respect, the attendance being the largest in the history of the society, and the exhibits in all departments being good. The display in the floral department was the largest and best ever shown at our fair, as was also the exhibits in the fruit and vegetable departments.

The horse department was well filled, although not quite up to the average of former years.

The entries in the cattle department were the largest ever had, all the principal breeds being represented, and the Aberdeen Angus taking the greater number of premiums.

With the State appropriation the society will be free from debt for the first time in its existence.

## DELAWARE.

*J. J. Pentony, Manchester, Iowa, October 1, 1904.*

The general condition of crops the past season has been good.

*Corn*—Will yield on an average of forty bushels per acre, and is of good quality.

*Oats*—Yielded on an average of thirty-five bushels per acre, and were of good quality.

*Rye*—Yielded about thirty bushels per acre.

*Barley*—Of good quality and yielded about forty bushels per acre.

*Sorghum*—Very little raised.

*Timothy*—An excellent crop, averaged seven bushels of seed per acre.

*Clover*—The greater part of it was frozen out last winter.

*Prairie hay*—A large crop and was put up in excellent condition.

*Other grains and grasses*—Yielded well, and were of good quality.

*Potatoes*—Of good quality and averaged one hundred bushels per acre.

*Vegetables*—Of average yield and quality.

*Apples*—A fair crop.

*Other fruits*—Were good both in quality and yield.

*Cattle*—Did well.

*Horses*—Are in good condition.

*Swine*—A great many raised, and are in a healthy condition.

*Sheep*—Did well.

*Poultry*—This industry has been a very profitable one the past season.

*Bees*—Have done well, gathering a fair crop of honey.

*Drainage*—Natural drainage is very good; very little tiling done.

*Other industries*—The creamery industry is a growing one, and is proving very profitable.

*Lands*—Range in price from forty to one hundred and fifty dollars per acre.

*Report of fair*—Held at Manchester, September 6th, 7th, 8th and 9th, and was a success in every particular. Attendance was good; every department was well filled with excellent exhibits, and premiums have been paid in full.

## DES MOINES.

*Chas. F. Wedertz, Burlington, Iowa, October 15, 1904.*

Crops in general the past season have been very good.

*Corn*—Is of good quality and will yield about two-thirds of a full crop.

*Oats*—Yielded well and were of good quality.

*Wheat*—Very little grown, but was of good quality and yield.

*Timothy*—Good.

*Clover*—Fair.

*Prairie hay*—Good.

*Other grains and grasses*—Yielded well and of good quality.

*Potatoes*—Were of excellent quality and yielded about three-fourths of a full crop.

*Vegetables*—Were very good.

*Apples*—Yielded well and were of good quality.

*Other fruits*—Were good, both in quality and yield.

*Report of fair*—Held at Burlington, August 9th, 10th, 11th and 12th. Was very successful, considering that the old association had announced that no fair would be held, and the new association taking hold of it only four weeks before the holding of same.

## FAYETTE.

*H. P. Hancock, West Union, Iowa, October 11,1904*

Crops have been very good, although the season has been somewhat cold and backward.

*Corn*—Will yield about three-fourths of an average crop, but the quality is good, with the exception of that which was planted late, which was injured to some extent by early frosts.

*Oats*—Were of good quality and yielded from twenty-five to fifty bushels per acre.

*Wheat*—Acerage sown was small and the yield light, but quality good.

*Rye*—Acerage small; yield and quality good.

*Barley*—Acerage and yield were large, and quality was never better.

*Flax*—Very little raised.

*Buckwheat*—Small acreage, and crop is not yet matured.

*Millet*—Very little sown.

*Sorghum*—Not much grown; fair yield.

*Timothy*—A good crop, and while the yield was not as large as last year, the quality was excellent.

*Clover*—The greater part of it was frozen out last winter; new seeding has done well.

*Prairie hay*—A large crop was put up in excellent condition.

*Potatoes*—Were of excellent quality and yield; acerage planted was much above the average.

*Vegetables*—An excellent crop both in quality and yield.

*Apples*—Were of good quality and the yield was unusually large.

*Other fruits*—Were good in both quality and yield, and especially grapes and plums, which were the finest raised in years.

*Cattle*—Are being raised extensively, and are in excellent condition.

*Horses*—Both heavy draft and light harness breeds are raised extensively, for which there is a ready sale at good prices.

*Swine*—A great many raised, and are free from disease.

*Sheep*--An industry which is growing; principally long wool breeds raised.

*Poultry*—Has done well, and are bringing good prices on the market.

*Bees*—Very little attention given to this industry, and the past season did not do very well, owing to the scarcity of clover.

*Drainage*--The natural drainage is very good, and very little tiling is being laid.

*Other industries*--The raising of sweet corn for canning purposes is a very profitable one, there being over a million cans of corn put up by the factory the past season.

*Lands*--Range in price from $40 to $100 per acre; very little changing hands.

*Report of fair*—Fiftieth anniversary, held at West Union, September 6th, 7th, 8th and 9th, and was a success in every particular. The weather was favorable, and the attendance and exhibits surpassed any in the history of the society, the attendance on Thursday reaching ten thousand. Our attractions were good, and all visitors were well pleased.

## FLOYD.

*C. M. Carr, Charles City, Iowa, September 20, 1904.*

The general condition of crops the past season has been very good.

*Corn*—Indications at this time are that there will be an excellent crop, both in quality and yield.

*Oats*—Yielded well, and were of good quality.

*Wheat*—Very little raised, but was of good quality.

*Rye*—A very poor crop.

*Barley*—Good, both in quality and yield.

*Flax*—Very little raised.

*Buckwheat*—An excellent crop.

*Millet*—Very little grown, but yielded well and was put up in good condition.

*Sorghum*—Very little grown.

*Timothy*—Yielded well, and was put up in excellent condition.

*Clover*—Was badly winter-killed.

*Prairie hay*—Very little grown, but was put up in good condition.

*Potatoes*—An excellent crop both in quality and yield.

*Vegetables*—Good.

*Apples*—Yielded well, and were of good quality.

*Other fruits*—Were abundant, and of good quality.

*Cattle*—Are plentiful and in good condition.

*Horses*—Good heavy drafts are scarce, the medium class being plentiful.

*Swine*—The number raised was not up to the average, but are in a healthy condition.

*Sheep*—Very few raised.

*Poultry*—Is in a healthy condition and bringing good prices; not so large a number raised as last year.

*Bees*—Did not do well.

*Drainage*—Natural drainage is good.

*Other industries*—Are factories for the manufacturing of gasoline engines, door and sash, furniture and bank fixtures.

*Lands*—Prices remain the same as last year, with very little changing hands.

*Report of fair*—Held at Charles City, September 6th, 7th, 8th and 9th.

## FRANKLIN.

*J. W. Cummings, Hampton, Iowa, October 20, 1904.*

Crops have been generally good, although the season has been somewhat cool.

*Corn*--Will yield a fair crop.

*Oats*--An excellent yield and quality good; very heavy.

*Wheat*—Fair.

*Rye*—None grown.

*Barley*--Yielded well and was of good quality.

*Flax*--None grown.

*Buckwheat*--Poor, both in quality and yield.

*Millet*—None grown.

*Sorghum*--Very little grown, but did well.

*Timothy*--Quality better than 1903, but yield not so large.

*Clover*--The greater part frozen out last winter.

*Prairie hay*--Not much raised, but yielded well and was put up in excellent condition.

*Potatoes*--An exceptionally large crop, and were of good quality.

*Vegetables*--Good.

*Apples*--A very heavy yield and of good quality.

*Other fruits*—Were good both in quality and yield.

*Cattle*—There is a marked improvement in the class being raised.

*Horses*--A great deal of breeding being done, and of a good grade.

*Swine*--A large number raised, and are in a healthy condition.

*Sheep*--Very few raised or kept.

*Poultry*—Has done well.

*Bees*--Have done well.

*Drainage*--Natural drainage very good, although some tiling is being laid.

*Other industries*--An effort is being made to develop the peat bogs in the southwestern part of the county, which is being met with fairly good success.

*Lands*—Range in price from $35 to $100 per acre, but very little is changing hands.

*Report of fair*—Held at Hampton, September 6th, 7th, 8th and 9th. The weather was favorable, attendance good, all departments well filled with excellent exhibits, and the fair was pronounced a success in every particular by those attending.

## GRUNDY.

*E. G. Ensminger, Grundy Center, Iowa, September 26, 1904.*

All crops the past season have done very well, although the season at times has been cool.

*Corn*—Will be an average crop both in yield and quality; some little damage was done by frost on September 15th to that which was planted on the lowlands.

*Oats*—Averaged about thirty-five bushels yer acre, and were of excellent quality, being very heavy.

*Wheat*—Very little raised in this county, as it is not a satisfactory crop.

*Rye*—Acreage very small, but quality and yield were good.

*Barley*—Acreage large, and yield and quality a good average with former years.

*Flax*—None raised.

*Buckwheat*—None raised.

*Millet*—Acreage small, but yielded a fair crop.

*Sorghum*—Very little raised.

*Timothy*—A good crop, both in seed and hay.

*Clover*—An excellent crop. A great deal of it is being sown as farmers realize that it is a good fertilizer and enriches their land.

*Prairie hay*—Very little land used for this purpose excepting in sloughs, which yielded a fair crop.

*Other grains and grasses*—Some experimenting was done in the raising of alfalfa, and it did very well the past season.

*Potatoes*—A large crop and of excellent quality.

*Apples*—Done very well, both in yield and quality. The Duchess variety is the most successful raised in this district.

*Other fruits*—Were abundant and of good quality.

*Cattle*—This industry is becoming a very important one in the county, farmers in general giving a great deal of attention to the raising of thoroughbred stock. A great deal of feeding for beef is also being done.

*Horses*—Heavy classes are bred extensively, and several car loads are shipped annually from this county to the eastern markets.

*Swine*—One of the leading industries, and there is a noticeable improvement in their breeding.

*Sheep*—A great many are fed for the market annually in this county, they being purchased in the western markets and shipped east after fattening. This industry has been very profitable the past season.

*Poultry*—More attention is given to the raising of poultry each year, and better breeds are being introduced into the county.

*Bees*—Very few kept or raised in this county.

*Drainage*—The general lay of the land is sufficiently rolling to furnish good drainage, and where there is low, wet places it can be successfully tiled.

*Other industries*—The creamery business is carried on extensively, there being ten creameries in operation in the county.

*Lands*—Are of the best quality, being of deep black loam with clay subsoil, and adapted to all kinds of vegetation.

*Report of fair*—Held at Grundy Center, September 13th, 14th and 15th, and was fairly successful. The weather was unfavorable the first day, keeping exhibitors from bringing in their stock until the second day, at which time all departments in live stock were well filled and we were obliged to provide additional accommodations for swine, sheep and cattle. While the cattle exhibit was not as large as we have had at former fairs, some very fine stock was shown. The poultry exhibit was much larger than last year. Agricultural and horticultural halls were well filled with excellent exhibits.

The attendance was on a good average with former years, and the fair was pronounced a success in every particular.

## GUTHRIE.

*Alex H. Grisell, Guthrie Center, Iowa, October 24, 1904.*

The general condition of crops the past season has been above the average, although the season has been somewhat backward, but no killing frost was had until October 22d.

*Corn*—Acreage large, and yield and quality excellent.

*Oats*—Quality good, but yield below the average.

*Wheat*—Poor, both in quality and yield.

*Rye*—Very little raised.

*Barley*—Acreage small, but yield and quality good.

*Flax*—None grown.

*Buckwheat*—None raised.

*Millet*—Only a small amount sown, and that on ground which was too wet for corn.

*Sorghum*—Good yield, and of superior quality.

*Timothy*—An excellent crop, and was taken care of without serious damage.

*Clover*—Good crop, and well cared for.

*Prairie hay*—None raised.

*Potatoes*—A large yield and were of excellent quality.

*Vegetables*—The season was conducive to the growth of all vegetables, and a large and excellent crop was grown.

*Apples*—Above the average in yield, and of fine quality.

*Other fruits*—Were abundant.

*Cattle*—Are in good condition; not so many being fed for beef as in former years.

*Horses*—Are in great demand, and the farmers in this district are unable to supply the demand.

*Swine*—Not so many raised as last year, owing to the scarcity and high price of last season's grain.

*Sheep*—Very few raised.

*Poultry*—Has been a very profitable industry the past season.

*Lands*—Range in price from $40 to $100 per acre.

*Report of fair*—Held at Guthrie Center, September 20th, 21st, 22d and 23d. The attendance was good, exhibits complete in every department, and the fair was pronounced the greatest success in the history of the society.

## HANCOCK.

*N. W. Stewart, Britt, Iowa, October 1, 1904.*

The general condition of the crops the past season has been very good on land that was well drained, while corn planted on low lying, wet ground did not mature rapidly and was injured somewhat by early frosts.

*Corn*—Will yield about two-thirds of a full crop, and is of good quality, except that planted on the low lands which were not well drained.

*Oats*—Yielded from twenty to fifty bushels per acre, the general average being thirty bushels per acre, and were of good quality.

*Wheat*—Acreage small, but crop fair both in quality and yield.

*Rye*—Very little sown.

*Barley*—A small acreage sown, but was of good quality and yield.

*Flax*—Little sown, but yielded fairly well.

*Buckwheat*—Very little planted.

*Millet*—Not much sown, but yielded fairly well.

*Sorghum*—None grown.

*Timothy*—Fairly good crop, but much thinner than average year. The hay was put up in good condition.

*Clover*—A good crop where not winter-killed.

*Prairie hay*—A fair crop.

*Potatoes*—A large yield and of excellent quality.

*Vegetables*—Were very good.

*Apples*—An abundant yield of all varieties.

*Other fruits*—Excellent, both in quality and yield.

*Cattle*—Have done well. While there has been a great number marketed the average farmer has enough for general purposes, and there is a noticeable improvement in their breeding.

*Horses*—This county is not overstocked, but enough are raised for general purposes, and breeding is fairly good.

*Swine*—Have done well the past season, the average number being raised, and no disease reported.

*Sheep*—Very few raised.

*Poultry*—The average number raised, and are in a healthy condition.

*Bees*—Have done well.

*Drainage*—Extensive operations are being carried on in putting in county ditches, small private ditches and tile drainage.

*Lands*—Range in price from $50 to $80 per acre, but very little is being sold.

*Report of fair*—Held at Britt, September 13th, 14th and 15th. The attendance was not as large as expected, owing to unfavorable weather prevailing the first and second days, but the exhibits were good in every department and especially in that of horses, cattle, fruit and vegetables.

## HARDIN.

*Harry S. Martin, Eldora, Iowa, October 1, 1904.*

The general condition of crops the past season has been good.

*Corn*—A very good crop, both in quality and yield, although some little damage was done by frosts to that planted on low land which was not well drained.

*Oats*—Yielded from twenty-five to fifty bushels per acre, and was of fair quality.

*Wheat*—An average crop.

*Rye*—Acreage small, but yielded well and was of good quality.

*Barley*—Yielded from thirty to fifty bushels per acre, and was of excellent quality.

*Flax*—None raised.

*Buckwheat*—Very little sown, but was of fair quality.

*Millet*—Small acreage.

*Sorghum*—Done well.

*Timothy*—Yielded from one to two tons per acre, and was put up in excellent condition.

*Clover*—Very little grown.

*Prairie hay*—Yielded a good crop.

*Potatoes*—Yielded well, but a good many are rotting.

*Vegetables*—Were good.

*Apples*—Yielded well and were of excellent quality.

*Other fruits*—Were good both in quality and yield.

*Cattle*—Are in good condition.

*Horses*—Are doing well.

*Swine*—Are in good condition, and no disease is reported.

*Sheep*—Did well.

*Poultry*—Not as many raised as last year, but are in a healthy condition.

*Bees*—Did fair.

*Drainage*—Natural drainage is fairly good.

*Lands*—The same in price as last year.

*Report of fair*—Held at Eldora, August 30th, 31st, September 1st and 2d, and was a success in every respect, and had the weather been more favorable it would have been a record breaker.

## HARRISON.

*W. H. Withrow, Missouri Valley, Iowa, October 24, 1904.*

On account of climatic conditions, crops generally were not as good as ordinarily. The excessive rainfall last year left the land in the level parts of the county completely saturated, thus retarding early spring work.

*Corn*—The crop as a whole will not be up to the average, although there is some fields that will yield much above.

*Oats*—Smaller acreage than usual, but crop generally was very good both in quality and yield.

*Wheat*—The usual acreage sown, but yield and quality was very poor, the berry not filling well.

*Rye*—Acreage on an average with former years, but yield and quality only fair.

*Barley*—Yield and quality below the average of former years, while acreage planted was about the same.

*Flax*—Very little raised.

*Buckwheat*—Of average yield and quality.

*Millet*—Usual acreage, and a very good crop on the higher lands, while that on the low lands was not so good.

*Sorghum*—Usual acreage, and an average yield.

*Timothy*—A very good crop on the higher lands, while that on the low lands was not so good.

*Clover*—Yielded well on land that was well drained.

*Prairie hay*—Exceptionally large crop, excepting where land was flooded in 1903, such land being almost barren this year.

*Potatoes*—Acreage planted much below the average, although yield was exceptionally large and quality good.

*Vegetables*—Were excellent both in quality and yield.

*Apples*—Yield was not as large as usual, but quality was excellent.

*Drainage*—This territory has suffered considerably the past two or three years from an insufficient system of drainage, but surveys and preliminary arrangements have been made for systematic drainage.

*Lands*—Values have depreciated slightly, owing largely to the excessive rainfall last season and improper drainage.

*Report of fair*—Held at Missouri Valley, October 4th, 5th and 6th.

October 4th was a bright, clear, warm day and everybody interested in the success of the fair looked forward with a determination to assist in making it the most successful one in the history of the society.

But they were doomed to disappointment, for on Wednesday morning, October 5th, a cold northwest wind began to blow and continued until the night of the sixth.

The attendance on Wednesday was much larger than expected early in the day, on account of the unpleasant weather, but on Thursday it was very light.

Exhibits in the live stock departments were good, although entries were few.

The exhibit in Floral Hall surpassed all exhibits of former years.

The farmers' clubs of the county were induced to make displays, and two of them, the ''Union Farmers' Club and the Harris Grove Farmers' Club'' did exceedingly well in their magnificent displays, which included works of art, kitchen and pantry stores, grains, fruits, and in fact everything that is produced on the farm. A great deal of credit is due these clubs for the effort made to furnish attractive displays of their products. There is seven such clubs in this county, and we hope to have all of them represented at our fair of 1905.

In our speed department we had some of the best and speediest racing ever seen on our grounds, the track record being lowered from 2:16¼ to 2:15 flat.

From point of exhibits and amusements the fair was the best ever held by the society, and had the weather been favorable the attendance would have exceeded that of any former year. No immoral shows or gambling were allowed on the grounds.

## HENRY.

*C. M. Clark, Mt. Pleasant, Iowa, September 16, 1904.*

Crops in general the past season have been very good.

*Corn*—An excellent crop both in quality and yield.

*Oats*—Were good both in quality and yield,

*Wheat*—Fair.

*Rye*—Fair.

*Barley*—Fair.

*Millet*—Good crop.

*Sorghum*—Did well.

*Timothy*—Yielded well, both in seed and hay.

*Clover*—Fair.

*Grasses*—Blue grass pastures were good.

*Potatoes*—An excellent crop both in quality and yield.

*Vegetables*—Did well.

*Apples*—Yielded fairly well, and were of good quality.

*Cattle*—Have done well; 24,855 assessed in county.

*Horses*—A large number raised; 9,768 assessed.

*Swine*—Have done well; increase in the number raised; 25,763 assessed.

*Sheep*—Number assessed in county, 13,094.

*Goats*—Number assessed in county, 38.

*Poultry*—Have done well.

*Bees*—Very few kept.

*Drainage*—Good.

*Lands*—Range in price from $35 to $150 per acre.

*Report of fair*—Held at Mount Pleasant, October 16th, 17th, 18th and 19th. While the exhibits in all departments were good, and the fair in this respect was pronounced a success, the attendance was small, owing to unfavorable weather prevailing.

## HENRY.

*C. W. Larkin, Winfield, Iowa, October 17, 1904.*

Crops in general have been very good, as the season has been very favorable.

*Corn*—Will yield a large crop and of excellent quality.

*Oats*—A fair yield and of good quality.

*Rye*—Acreage very small; yield and quality fair.

*Barley*—Acreage small; yield and quality fair.

*Sorghum*—Small acreage, but yielded well.

*Timothy*—Yielded a large crop and was of good quality.

*Clover*—The greater part of it was winter-killed.

*Other grains and grasses*—Blue grass pastures were good.

*Potatoes*—Yielded a large crop and were of excellent quality.

*Vegetables*—Were good.

*Apples*—Large yield and of excellent quality.

*Other fruits*—Yielded well and were of good quality.

*Cattle*—Are in a healthy condition.

*Horses*—Are doing well.

*Swine*—Native hogs were in a healthy condition until hogs diseased with cholera were shipped in from Kansas and sold at auction at the stock yards.

*Sheep*—Are in good condition.

*Poultry*—A larger number raised than last year.

*Bees*—Gathered an average crop of honey.

*Drainage*—Generally very good.

*Lands*—Values increasing.

*Report of fair*—Held at Winfield, August 23d, 24th, 25th and 26th. The weather was favorable, the attendance good, and all departments were filled with excellent exhibits.

## HUMBOLDT.

*John Cunningham, Humboldt, Iowa, September 17, 1904.*

Crops are a fair average with former years, although the season has been somewhat cool and wet.

*Corn*—At this writing promises a fair yield and of good quality, providing no killing frost is had for another week or ten days. A light frost visited this section September 15th, but did no damage.

*Oats*—Yielded less than the average crop, but were of superior quality. The average yield in the county was about thirty-five bushels per acre.

*Wheat*—Very uneven, some fields making a large yield of excellent grade, while others were very poor.

*Rye*—Acreage small, but yield and quality excellent.

*Barley*—Small acreage, but yielded well, and was of good quality.

*Flax*—Yielded a fair crop.

*Buckwheat*—Very little grown.

*Millet*—Light crop.

*Sorghum*—Very little grown.

*Timothy*—Good.

*Clover*—Good.

*Prairie hay*—Yielded a large crop, and was put up in good condition.

*Other grains and grasses*—Were good.

*Potatoes*—Yielded a record-breaking crop, and were of excellent quality. Retail market price, twenty-five cents per bushel.

*Vegetables*—Good.

*Apples*—An excellent crop, both in quality and yield, but there is no market for them.

*Other fruits*—Yielded well and were of good quality.

*Cattle*—Are in good condition and free from disease.

*Horses*—Are in good condition and free from disease.

*Swine*—The spring pig crop was light, and there are not as many old hogs as usual, owing to the scarcity and high price of feed. No disease.

*Sheep*—Are in good condition and free from disease. Very few raised or kept in this county.

*Poultry*—The average number raised.

*Bees*—Have done well.

*Drainage*—There has been fifteen petitions for county drains filed since the first of April, asking for drains from five to fifteen miles in length. A great deal of tiling is being done.

*Lands*—Range in price from $60 to $90 per acre, but very little changing hands.

*Report of fair*—Held at Humboldt, August 30th, 31st, September 1st and 2d. Exhibits were good in all departments, and while the attendance was not as large as usual, owing to unfavorable weather prevailing, all premiums were paid in full, and the fair was pronounced a success.

## IOWA.

*J. P. Gallagher, Williamsburg, Iowa, October 25, 1904.*

General condition of crops has been good, although the season has been somewhat cool, but exceptionally fine fall weather has given most crops ample time in which to mature.

*Corn*—Generally very good, both in quality and yield, although some slight damage was done by early frosts. The first killing frost in this district came on October 22d.

*Oats*—An excellent yield and of good quality.

*Wheat*—Very little sown, but yielded well and was of excellent quality.

*Rye*--Very little sown.

*Barley*—This grain is becoming more popular among feeders, and a much larger acreage was sown this year than last.

*Flax*—None grown.

*Timothy*--A fair yield and of excellent quality, both in hay and seed.

*Clover*—Was badly winter-killed; this year's seeding rooted well, and made an excellent growth the past month.

*Prairie hay*—None grown.

*Potatoes*—Yielded an enormous crop and were of excellent quality.

*Vegetables*—Done well.

*Apples*—Largest and best crop ever grown; price at picking time was fifty cents per bushel.

*Other fruits*—Grapes were a light yield, but all other fruits done well.

*Cattle*—Nearly every farm stocked to its fullest capacity; prospect of high priced feed and low priced beef on foot caused many sales in the early fall.

*Horses*—Are doing well. A great deal of attention is given to breeding and raising of same.

*Swine*—There was a good crop of pigs, but a great many were taken with disease and died. The average number is being fed this fall.

*Poultry*—Is raised extensively, and is in a healthy condition

*Bees*—Did not do well owing to cool season, and honey is of an inferior quality.

*Drainage*—A great deal of tiling being laid; local tile works was unable to supply the demand the past season.

*Lands*—While sales have not been numerous prices remain the same, good land being priced at $100 per acre.

*Report of fair*—Held at Williamsburg, September 6th, 7th and 8th. The weather was favorable, attendance good and exhibits in all departments well filled and premiums paid in full. In addition to paying for some needed improvements, the fair was pronounced a success in every particular.

## IOWA.

*John M. Groff, Victor, Iowa, September 19, 1904.*

The general condition of crops the past season has been very good.

*Corn*—Will yield an average crop and of fair quality. There will be a good deal of soft corn.

*Oats*—An excellent crop both in quality and yield.

*Rye*—Yielded well and was of good quality.

*Barley*—A fair crop; slightly discolored by heavy dews and light rains; weighed from forty-four to forty-seven pounds per measured bushel.

*Flax*—None raised.

*Buckwheat*—Small acreage, but yielded well and was of good quality.

*Millet*—None raised.

*Sorghum*—None raised.

*Timothy*—Yielded from four to ten bushels of seed per acre and of good quality.

*Clover*—The great part of it was frozen out last winter.

*Prairie hay*—None raised.

*Potatoes*—An excellent crop, both in quality and yield.

*Vegetables*—Did well, the season being exceptionally favorable.

*Apples*—A large yield and of excellent quality.

*Other fruits*—Did well.

*Cattle*—Pure bred cattle are raised extensively, and have done well the past season. Not so many being fed for beef as last year.

*Horses*—Have done well, and farmers are taking a great deal of interest in breeding and raising heavy draft horses for the market.

*Swine*—Have done well and are in a healthy condition.

*Sheep*—Very few raised, and they mostly of the mutton breeds, which have done well.

*Poultry*—A great many were raised and are bringing good prices. The best breeds are used.

*Bees*—Did not do well, owing to season being too cool.

*Drainage*—A great deal of tiling is being put down, and to good advantage.

*Other industries*—A great deal of attention is given to dairying, which has proven very profitable under the co-operative creamery plan.

*Lands*—Range in price from $60 to $110 per acre.

*Report of fair*—Held at Victor, August 9th, 10th and 11th. The weather was favorable and all departments were well filled with excellent exhibits.

## JACKSON.

*B. D. Ely, Maquoketa, Iowa, September 25, 1904.*

The general condition of crops has been very good, although the season has been exceptionally dry.

*Corn*—Quality is very good, although some damage done by early frosts to that planted on the low lands which were not well drained. Will yield more than one-half average crop.

*Oats*—Were the best raised in years, both in quality and yield.

*Wheat*—Small acreage, but yielded well and was of good quality.

*Rye*—Very little sown, but yielded well and was of good quality.

*Barley*—Good.

*Flax*—None raised.

*Buckwheat*—Very little sown, but yielded well and was of good quality.

*Millet*—Good.

*Sorghum*—Small acreage, but yielded well.

*Timothy*—The best crop in years.

*Clover*—Was all winter-killed.

*Prairie hay*—Very little prairie hay land in this district.

*Potatoes*—Yielded well and were of excellent quality.

*Vegetables*—Were good.

*Apples*—Good, both in quality and yield.

*Other fruits*—Were good.

*Cattle*—Are somewhat thin in flesh, owing to dry season causing pastures to become short. A great deal of care is taken in breeding and the class raised is becoming better each year.

*Horses*—Have done well, the breeding of which is one of the leading industries of this county.

*Swine*—Are doing well.

*Sheep*—Very few raised, but are of good breeding.

*Poultry*—Have done well.

*Bees*—A great many are kept in this county and did well the past season, there being much honey shipped out.

*Drainage*—Natural drainage is very good.

*Other industries*—The burning of lime is an important one, the product from the two plants in this county being enormous.

*Lands*—Remain the same in price as last year, some selling as high as $100 per acre.

*Report of fair*—Held at Maquoketa, August 30th, 31st, September, 1st and 2d. Exhibits were large and excellent in every department, attractions good, and had it not rained on Thursday and Friday the fair would have been a success in every particular.

## JASPER.

*C. W. Campbell, Newton, Iowa, September 23, 1904.*

Crops have done very well, although the season has been exceptionally cool.

*Corn*—A large acreage planted, and promises at this writing to yield an excellent crop.

*Oats*—Yielded fairly good and were of excellent quality.

*Wheat*—Was a failure except where seed from the north was sown, which yielded well and was of good quality.

*Rye*—Acreage small, but yielded well and was of good quality.

*Barley*—Very little planted, but yield and quality were good.

*Flax*—None raised.

*Buckwheat*—Acreage small; fair quality and yield.

*Millet*—Good.

*Sorghum*—Very little grown.

*Timothy*—A fair crop, but not as good as last year.

*Clover*—The greater part of it was frozen out last winter.

*Prairie hay*—Very little raised in this county, but yielded fairly good.

*Potatoes*—The best crop in years, both in quality and yield.

*Vegetables*—Were excellent.

*Apples*—An enormous yield, and were of excellent quality.

*Other fruits*—Peaches were a failure, but all other fruits were excellent, both in quality and yield.

*Cattle*—Are doing well.

*Horses*—A great many fine heavy draft horses raised and imported into this county.

*Swine*—A large number raised, and generally speaking are free from disease.

*Sheep*—Not very extensively raised, but satisfactory results are reported.

*Poultry*—A great many raised, and have done well the past season as eggs have been high in price.

*Bees*—Have done fairly well.

*Drainage*—Farmers are generally tiling their low lying lands.

*Lands*—Range in price from $60 to $150 per acre, but very little is changing hands.

*Report of fair*—Held at Newton, September 6th, 7th, 8th and 9th, and was the most successful fair ever held by the society.

The weather was favorable, attendance good, and exhibits in every department excellent. All premiums and expenses were paid in full.

## JEFFERSON.

*R. C. Sayers, Fairfield, Iowa, September, 20, 1904.*

While the season has been somewhat backward the prospect is that everything will be out of harm's way by the time frost comes.

*Corn*—Very good in all sections.

*Oats*—Good yield, splendid quality.

*Wheat*—A small acreage, but extra quality.

*Rye*—Not much sown; fair crop.

*Barley*—Good.

*Flax*—Very little grown.

*Buckwheat*—Very little grown.

*Millet*—Not much sown.

*Sorghum*—Small acreage, but yielded well.

*Timothy*—An unusually large crop and was of excellent quality.

*Clover*—Good crop.

*Prairie hay*—Very little grown.

*Potatoes*—The largest crop in years, and were of excellent quality.

*Vegetables*—Good.

*Apples*—Not quite up to last year, either in quality or yield.

*Other fruits*—Pears and plums in abundance, but peaches yielded only a small crop.

*Cattle*—There are many fine herds of registered stock in this county. Beef cattle are very low in price.

*Horses*—All classes of horses are raised in this county, and it is considered the best market in Iowa.

*Swine*—Have done well. Market is good.

*Sheep*—Are well bred, and quite a number are raised in this county.

*Poultry*—An industry that is carried on extensively, and there are several fanciers who have been very successful at the different fairs.

*Bees*—Have done well the past two years.

*Drainage*—A great deal of tiling being laid.

*Other industries*—The creamery industry is a very profitable one.

*Lands*—Mostly black soil; farms well improved and bringing good prices where sold.

*Report of fair*—Held at Fairfield, September 13th, 14th, 15th and 16th. Although the weather was unfavorable the first day the attendance was good, all departments were well filled with an excellent class of exhibits, and the fair was pronounced a success in every particular.

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## JONES.

*W. G. Eilers, Monticello, Iowa, October 10, 1904.*

The general condition of crops the past season has been good.

*Corn*—Will yield an average crop; very little damage done by frost.

*Oats*—Yielded well and were of excellent quality.

*Wheat*—Very little grown in this county.

*Rye*—Good, both in yield and quality.

*Flax*—None raised.

*Buckwheat*—Very little sown, and that was a failure.

*Sorghum*—A short crop, owing to early frosts.

*Timothy*—A large crop of hay and was put up in excellent condition.

*Clover*—Good.

*Prairie hay*—Very little grown in this district.

*Potatoes*—Yielded a large crop, and were of excellent quality.

*Apples*—Summer and fall varieties abundant and of excellent quality; no winter apples raised.

*Cattle*—Shorthorn is the principal breed raised, and have done well the past season.

*Horses*—The raising of thoroughbred draft breeds is carried on extensively in this county, and good prices are obtained.

*Swine*—Are doing well, there being less cholera than last year.

*Sheep*—Very few kept or raised in this county, but have done well the past season.

*Poultry*—Is raised extensively, and is a very profitable industry.

*Drainage*—Low places are generally well tiled.

*Other industries*—Raising of sweet corn for canning purposes is an extensive and profitable one.

*Report of fair*—Held at Monticello, September 12th, 13th, 14th, 15th and 16th. The weather was favorable, attendance good, exhibits in every department excellent, and the fair was pronounced a success in every respect.

## JONES.

*John Z. Lull, Anamosa, Iowa, October 17, 1904.*

Crops in general are not up to the standard, owing to the extremely cool season.

*Corn*—Will yield a fair crop, although some little damage was done by early frosts to that which was planted late and on the low lands.

*Oats*—Large yield, and of excellent quality.

*Wheat*—Very little raised.

*Rye*—Small acreage, but did well.

*Barley*—Very little sown.

*Flax*—None raised.

*Buckwheat*—Small acreage, but yielded well, and was of good quality.

*Millet*—Very little sown.

*Sorghum*—Small acreage, but yielded well.

*Timothy*—Did not yield as large a crop as last year, but was of better quality.

*Clover*—Yielded an excellent crop; was winter-killed several years ago, but new crop is doing well.

*Prairie hay*—Yielded well, and was put up in excellent condition.

*Potatoes*—Yielded an enormous crop, and were of good quality.

*Vegetables*—Were in abundance.

*Apples*—An exceptionally large yield and of good quality.

*Other fruits*—Did well.

*Cattle*—A great many being fed for beef.

*Horses*—A large number are raised in this county, and are of good breeding. Prices are good.

*Swine*—Extensively raised, and have done well the past season.

*Sheep*—Very few kept or raised.

*Poultry*—Have done well the past season, and prices are high.

*Bees*—Not many kept or raised in this county, but enough to supply the local demand for honey.

*Drainage*—Is excellent.

*Other industries*—Are creameries and canning factories, which do a profitable business.

*Lands*—Soil is unexcelled, and ranges in price from $60 to $100 per acre.

*Report of fair*—Held at Anamosa, August 22d, 23d, 24th, 25th and 26th. The weather was favorable, attendance good, exhibits in every department large and of excellent quality, and the fair was pronounced a success in every particular.

## KEOKUK.

*Geo. A. Poff, What Cheer, Iowa, October 9, 1904.*

The general condition of crops the past season has been excellent.

*Corn*—A large acreage planted, is in good shape and promises to yield a large crop and of good quality.

*Oats*—Yielded on an average about thirty-five bushels per acre, and were of excellent quality.

*Wheat*—Small acreage sown, but was of good quality and yield.

*Rye*—Small acreage, but extra good quality.

*Barley*—Small acreage, but quality and yield good.

*Flax*—Very little sown, but yielded well and was of good quality.

*Buckwheat*—Yield and quality good; small acreage.

*Timothy*—Of excellent quality and yield.

*Prairie hay*—A large yield and was put up in excellent condition. Pasturage has been abundant all season.

*Potatoes*—An enormous yield and of good quality; selling at thirty cents per bushel on the market.

*Vegetables*—Did well.

*Apples*—A large yield and of good quality; selling at from twenty-five to forty cents per bushel.

*Cattle*—There is a noticeable improvement in the breeding of all kinds of stock.

*Horses*—Have done well, and there are a great many successful breeders in this county.

*Swine*—Have done well; noticeable improvement in quality.

*Lands*—Range in price from $60 to $80 per acre.

*Report of fair*—Held at What Cheer, September 19th, 20th, 21st and 22d. The attendance was good and all departments were well filled with excellent exhibits, there being sixty-seven entries in the speed department. The attractions were good, which included shows and a "Midway," and the fair was pronounced the most successful one ever held by the association.

## KOSSUTH.

*T. H. Wadsworth, Algona, Iowa, October 11, 1904.*

Crops in this section have been a great deal better than expected, as the season has been exceptionally cool.

*Corn*—Will yield a fair crop and generally is of good quality, frosts coming late and giving it plenty of time in which to mature.

*Oats*—A large yield and of excellent quality; the best crop raised for three years.

*Wheat*—Small acreage sown, but yielded well and was of good quality.

*Barley*—A fair yield and of good quality.

*Flax*—Very little sown; but did well.

*Timothy*—Excellent quality and large yield.

*Clover*—Yielded a fair crop

*Prairie hay*—Yielded a large crop and was put up in excellent condition.

*Potatoes*—A very good crop both in quality and yield.

*Vegetables*—Unsurpassed, both in quality and yield.

*Apples*—The largest crop ever grown in this county, and were of excellent quality.

*Other fruits*—Did well.

*Cattle*—A great many thoroughbred cattle raised in this county.

*Horses*—Have done well.

*Swine*—A great many raised, Duroc Jersey being the preferred breed.

*Sheep*—Have done well, although there are not as many raised in this county as in former years.

*Poultry*—A great many raised, and some fine birds were shown at the fair.

*Bees*—Quite a number are keep in this county, and have done well the past season.

*Drainage*—A great deal of tiling is being laid.

*Lands*—Prices remain the same as last year, although there is very little changing hands.

*Report of fair*—Held at Algona, September 13th, 14th, 15th, and 16th. The weather was more favorable than has been for several years past, and the attendance was very good.

## LEE.

*E. P. Armknecht, Donnellson, Iowa, October 10, 1904.*

Crops, taken as a whole, have been above the average, although the spring was wet, but killing frosts coming late has given everything opportunity to mature.

*Corn*—Is excellent both in quality and yield, being the best crop raised for years.

*Oats*—Yielded a fair crop and was of excellent quality. Oats were sown ate which accounts for the slight decrease in yield.

*Wheat*—Quality good; yielded about a half crop; wet weather in harvest caused considerable damage by rust.

*Rye*—Yielded a good crop, and was of excellent quality.

*Barley*—None raised.

*Flax*—None raised.

*Buckwheat*—None raised.

*Millet*—None raised.

*Sorghum*—Quality and yield good.

*Timothy*—Quality was excellent and yielded from six to ten bushels per acre; estimated that fifty cars of seed were shipped out of this county.

*Clover*—Light crop.

*Prairie hay*—None grown.

*Potatoes*—A large yield and were of excellent quality.

*Vegetables*—Excellent.

*Apples*—Yielded an abundant crop and were of good quality. Winter varieties selling at from forty to sixty cents per bushel.

*Other fruits*—Were good. Peaches, pears and plums yielded an exceptionally large crop.

*Cattle*—Raised extensively. A great many feeders are shipped in from Kansas City and western markets, although very little profit has been made in feeding same for market the past year.

*Horses*—Demand for heavy drafts is good, prices ranging from $100 to $400.

*Swine*—No disease reported. Poland China breed predominates, although there are a number of Chester Whites and Duroc Jerseys raised.

*Sheep*—Are not raised extensively. Middle wool breeds predominate.

*Poultry*—Has been very profitable and there is a noticeable improvement in the quality being raised

*Other industries*—Cheese factories have been very successful.

*Lands*—Range in price from $60 to $80 per acre, and are steadily advancing.

*Report of fair*—Held at Donnellson, August 23d, 24th and 25th. The fair was a success in every particular, and financially gave a net balance of $210.

## LINN.

*E. E. Parsons, Marion, Iowa, October 18, 1904.*

The general condition of crops the past season has been very good.

*Corn*—While some little damage was done by early frosts, the crop as a whole will be an average one both in quality and yield.

*Oats*—An excellent yield, but only fair in quality.

*Wheat*—Small acreage.

*Rye*—Very little raised.

*Barley*—None raised.

*Flax*—None sown.

*Buckwheat*—Acreage small, but yielded a fair crop.

*Timothy*—An excellent crop of hay was harvested.

*Other grains and grasses*—Pastures have been excellent all season.

*Potatoes*—A large yield, and were of excellent quality.

*Cattle*—There is a noticeable improvement in the grade of cattle being raised, and there are a great many high class animals in this county.

*Horses*—More attention is given to the raising of thoroughbred horses than any other branch of the stock business in this county, and the county is becoming noted for the development in this line.

*Swine*—Have done well, and the breeding of thoroughbreds is increasing each year.

*Sheep*—Very few raised in this county.

*Poultry*—Have done well, and there are a great many breeders of fine fowls.

*Lands*—While very few farms have changed hands prices remain the same as last year, ranging from $80 to $100 per acre, and some lying in close proximity to towns being held as high as $150 per acre.

*Report of fair*—Held at Marion, August 15th, 16th, 17th, 18th and 19th. The attendance was good until Friday when owing to a heavy rain the fair was carried over Saturday, which resulted in a financial loss to the society; otherwise the fair was a success in every particular.

The exhibits of cattle, horses, swine and sheep exceeded in numbers and quality all former exhibits at our fair. No premiums were offered on poultry, owing to the society not having a suitable building in which to place the exhibit. It is the intention of the society to erect a building the coming year in which to place this exhibit.

## LINN.

*A. Heaton, Fairfax, Iowa, September 26, 1904.*

The general condition of crops has been very good, although the season has been somewhat cool and dry.

*Corn*—A killing frost visiting this section on the 13th of September damaged to some extent that which was planted late and on the low lands, but crop as a whole is very good and will yield from forty to seventy bushels per acre.

*Oats*—Yielded from thirty-five to fifty bushels per acre, and of excellent quality; price on market, twenty-seven cents.

*Wheat*—Small acreage, but yielded on an average of twenty bushels per acre, and was of fair quality; price on market, eighty cents to one dollar and five cents per bushel.

*Rye*—Very little sown, but was an average crop both in quality and yield.

*Barley*—Of excellent quality and yielded from thirty to forty bushels per acre.

*Millet*—Did well.

*Timothy*—Yielded a large crop and was put up in excellent condition.

*Clover*—The greater part of it was winter-killed, but new seeding has done well.

*Horses, cattle and swine*—Have done well the past year, and the exhibits in these departments at our fair were unsurpassed.

*Report of fair*—The fourteenth annual exhibition of the Prairie Valley Fair Association was held at Fairfax, September 6th, 7th, 8th and 9th. The exhibits in all departments were large and excellent in quality, but the attendance was not as large as expected, which was caused by the number of fairs in counties surrounding, holding their exhibitions the same week.

## LINN.

*E. E. Hendeson, Central City, Iowa, October 10, 1904.*

The general condition of crops the past season has been very good.

*Corn*—Although considerable damage was done by early frosts, the greater part of it was out of harm's way and will yield a good crop.

*Oats*—A large yield and were of splendid quality.

*Wheat*—None raised.

*Rye*—Small acreage, but good in quality and yield.

*Flax*—None sown.

*Timothy*—Yielded a fair crop of hay which was put up in excellent condition; bringing from six to eight dollars per ton on the market.

*Potatoes*—Largest yield and best quality in years.

*Cattle*—In fair average condition. Nearly all farmers in this county keep cows for dairy purposes.

*Swine*—A decrease in numbers raised from last year.

*Drainage*—A great deal of tiling is being laid, the county consuming the entire output of the local tile works the past season.

*Lands*—Range in price from $60 to $90 per acre, but very little is changing hands.

*Report of fair*—Held at Central City, September 13th, 14th, 15th and 16th. A hard, killing frost on the first day of the fair, and cold weather the first two days of the fair hurt our attendance to some extent, but on the whole the attendance was very good, and receipts exceeded those of last year by three hundred dollars. Our grounds have been much improved, and exhibits in the live stock department were of splendid quality and well filled in numbers, there being over one hundred and sixty entries in the swine department. Wednesday, September the 14th, was set aside as "Old Soldiers Day," and the attendance was large. President Storms of the Iowa State College at Ames was present and gave the address of the day.

## LOUISA.

*O I. Jamison, Columbus Junction, Iowa, October 28, 1904.*

Crops have been very good, although the season has been somewhat cool.

*Corn*—Well matured, and there will be an excellent yield; picking has just begun.

*Oats*—An exceptionally large yield, and were of excellent quality.

*Wheat*—Very little sown.

*Rye*—Small acreage, but yield and quality fair.

*Barley*—Very little sown.

*Flax*—None grown.

*Buckwheat*—None grown.

*Millet*—Small acreage.

*Sorghum*—Small acreage, but yielded well.

*Timothy*--Excellent yield and was put up in good condition.

*Clover*—Yielded an abundant crop of hay.

*Prairie hay*—None grown.

*Potatoes*—An exceptionally large crop and were of good quality.

*Vegetables*—Did well.

*Apples*—Above the average crop in yield, but somewhat wormy.

*Other fruits*—No peaches raised; all other fruits did well.

*Cattle*—Pasturage is good, and cattle have done fine; no necessity for feeding stockers as yet. More than the usual number will be fed for beef.

*Horses*—Have done well; a great many are being shipped to eastern markets.

*Swine*—Are doing well, and are generally hearty and thrifty, although there is a report of some cholera in one township where hogs were imported.

*Sheep*—Very few raised or kept in the county.

*Poultry*—Did well.

*Bees*—Very few raised or kept in this county.

*Report of fair*—Held at Columbus Junction, August 30th, 31st, September 1st and 2d. Owing to excessive rainfall every day during the fair, except one, the attendance was very light, and the society suffered a big loss.

## LOUISA.

*Ed. Hicklin, Wapello, Iowa, October 10, 1904.*

The season has been very favorable to crops in this county, and on a whole they have been very satisfactory.

*Corn*—Is practically matured at this date, there being less than ten per cent of it in danger of frost. Acreage planted is large and will yield from forty to seventy bushels per acre, and of good quality.

*Oats*—Owing to the use of poor seed and unfavorable weather conditions at the time of sowing they were light in quality, but yielded from twenty-five to thirty-five bushels per acre.

*Wheat*—Small acreage, but yielded a fair crop and was of good quality.

*Rye*—Yield and quality good, although acreage planted was small.

*Barley*—Small acreage; yielded on an average of forty bushels per acre.

*Flax*—None raised.

*Buckwheat*—Very little raised in this county.

*Millet*—Small acreage.

*Sorghum*—Is only raised in small patches for home use.

*Timothy*—Yielded from one to two and one-half tons of hay per acre, and was put up in excellent condition.

*Clover*—Poor.

*Prairie hay*—Very little raised in this county.

*Other grains and grasses*—All pasturage has been good.

*Potatoes*—Yielded a large crop and were of excellent quality.

*Vegetables*—Were unexcelled in the history of this county.

*Apples*—A large yield and were of good quality.

*Other fruits*—Small fruit was in abundance, but there were no peaches raised, and only a small crop of pears.

*Cattle*—Have done well, and a large number will be fed this fall and winter for beef.

*Horses*—Are in good demand, prices ranging from $50 to $200, according to the individual. Breeding is carried on quite extensively in road and draft classes.

*Swine*--Are thrifty; large litters, and are generally well bred.

*Sheep*—Very few raised in this county, but are good wool producers.

*Poultry*—A great deal of attention is given this industry, as it is a very profitable one; prices high the past season.

*Bees*—Very few raised or kept in this county.

*Drainage*—Considerable attention is given to tile and open ditch drainage, and a great deal of ditching is contemplated.

*Lands*—Range in price from $30 to $125 per acre.

*Report of fair*—Second annual exhibit at Wapello, September 20th, 21st, 22d and 23d. Although the weather conditions were very unfavorable throughout the days of the fair, the attendance was very good, and exhibits in every department were excellent, and especially in those of agriculture, horticulture, kitchen and pantry stores, art, poultry and swine.

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## MADISON.

*H. A. Mueller, Winterset, Iowa, September 6, 1904.*

The past season in many respects, has been more favorable than last year. While a good deal of rain fell, it was not prolonged, and crops generally were put in in good season, and the weather at harvest time was favorable.

*Corn*—A larger acreage was planted than last year, and there is less waste owing to wet places. It will yield a much larger crop than last year, and is of excellent quality.

*Oats*—Smaller acreage than last year, but yielded on an average of twenty-five bushels per acre, and was of fair quality.

*Wheat*—Small acreage, which was planted mostly in the northern part of the county. The prospects in the early spring were for a good crop, but later black rust killed most of it, and the crop was almost a total failure.

*Rye*—Small acreage sown which yielded about twelve bushels per acre.

*Barley*—A larger acreage sown than ever before, and yielded a good crop of excellent quality.

*Flax*—None sown.

*Buckwheat*—Small acreage sown, which promises a good yield.

*Millet*—Very little sown.

*Sorghum*—Considerable was planted in districts where factories were convenient.

*Timothy*—The hay crop was much larger than has been for years, and was generally put up in good condition. Seed yielded from four to eight bushels per acre.

*Clover*—A very profitable crop in this county, farmers sowing it as a fertilizer, and it is also excellent feed for cattle.

*Prairie hay*—Acreage small, but yielded a large crop and was put up in good condition. Price on market, $4 per ton.

*Other grains and grasses*—Considerable sorghum cane is raised for fodder, and makes excellent feed for cattle.

*Potatoes*—A large crop and of good quality. Price on market twenty-five cents per bushel.

*Vegetables*—Did well. One head of cabbage exhibited at the fair weighed thirty-three pounds.

*Apples*—There was an exceptionally large crop of summer apples, a great many of which were not gathered, owing to their being no market for them. Winter varieties yielded a fair crop.

*Other fruits*—Strawberries, cherries, blackberries, grapes and plums yielded a large crop and were of excellent quality.

*Cattle*—There are a great many feeders in this county, owing to the scarcity of the corn crop last year. and are selling at from three to three and one-half cents per pound. Number of cattle assessed in county is 37,981, at an actual value of $807,808

*Horses*—County is noted for its excellent grade of horses; several car loads shipped out annually; prices have been high the past season. Number assessed 11,723, at an actual value of $605,232.

*Swine*—A great many raised, there being 38,660 assessed at an actual value of $220,130. Principal breeds raised are Poland China, Duroc Jersey and Chester White.

*Sheep*—This industry is on the decrease; number assessed in county, 4,381, at an actual value of $9,324.

*Poultry*—Considering the amount of money invested, this is the best paying proposition on the farm. Several carloads of eggs and dressed poultry are shipped out of this county each year.

*Bees*—The number of swarms kept in county is increasing, and the honey crop the past season was excellent.

*Drainage*—Lay of land in this county affords excellent natural drainage,

*Other industries*—The quarrying of limestone in this county would be an important one if there were better railroad facilities.

*Lands*—Range in price from $50 to $75 per acre; very little changing hands.

*Report of fair*—Held at Winterset, September 20th, 21st, 22d and 23d. Although the weather was somewhat threatening the attendance was good, and every department was well filled with excellent exhibits, and the fair was pronounced a success in every particular. Special preminms were offered on farm products by a great many of the merchants, and this brought out a large display.

## MAHASKA.

*N. D. Bales, New Sharon, Iowa, October 20, 1904.*

Crops, on the whole, the past season have been very good.

*Corn*—Is very good in this section, some of that which was planted on the low lands was slightly damaged, but the crop on a whole will be an average one with former years.

*Oats*—A smaller acreage sown that in former years, but yield and quality was fair.

*Wheat*—Very little grown in this county.

*Rye*—A good crop, both in quality and yield.

*Barley*—Acreage small; yield and quality fair.

*Flax*--None grown.

*Buckwheat*—Very little sown, but yielded a fair crop and of good quality.

*Millet*—Small acreage, but yielded a good crop.

*Sorghum*—Smaller acreage than usual, but did well.

*Timothy*—This crop was not up to the average of former years, there being only a fair yield.

*Clover*—Fair.

*Prairie hay*—None in this section.

*Potatoes*—Yielded an enormous crop and were of good quality.

*Vegetables*—Were excellent.

*Apples*—Summer and fall varieties yielded a large crop and were of excellent quality, while winter varieties yielded only a fair crop.

*Other fruits*—Pears and peaches were almost a total failure; other fruits were plentiful and of a good quality.

*Cattle*—There are a number of large breeders in this county, and all seem to be prospering.

*Horses*—Demand good, and prices high.

*Swine*—Have done well.

*Sheep*—Several large herds of western sheep have been brought in for feeding purposes, but as yet we have no report as to the success of the experiment.

*Poultry*—Have done well, both eggs and fowls bringing good prices.

*Bees*—Have done well.

*Drainage*—This section is getting to be well drained, a great deal of tiling having been laid in the past few years.

*Lands*—Are gradually increasing in value.

*Report of fair*—Held at New Sharon, September 13th, 14th, 15th and 16th. Favorable weather prevailed; the attendance was good, and the fair was pronounced a success in every particular.

## MARION.

*Chas. Porter, Pella, Iowa, October 27, 1904.*

Crops have been good, the season being very favorable.

*Corn*—A larger acreage planted than usual, and most of the corn is fully matured at this writing, and indications are that it will be a record breaking crop.

*Oats*—Yield and quality fair; some rust.

*Wheat*—Small acreage sown, which yielded a fair crop, but was generally of poor quality.

*Rye*—Small acreage, but was of good quality and yield.

*Barley*—Very little sown, but yielded well and was of good quality.

*Buckwheat*—None sown.

*Millet*—None sown.

*Sorghum*—Yield and quality were excellent, and was one of the most profitable crops considering the acreage planted.

*Timothy*– An excellent crop, averaging one and one-half tons of hay per acre.

*Clover*—First cutting yielded a fair crop of hay, and while the second crop yielded a good crop of hay, that which was threshed for seed did not yield very good.

*Prairie hay*—None in this county.

*Potatoes*--A large yield, and were of excellent quality.

*Vegetables*--All kinds were good, both in quality and yield, and especially cabbage, beans, peas and tomatoes.

*Apples*--Crop was above the average, both in quality and yield.

*Other fruits*--Cherries, fair; peaches, a failure; pears, good; native plums, a failure.

*Cattle*--Have done well, and there is a noticeable improvement in both beef and dairy classes. The dairying industry is increasing, and a great many separators are used.

*Horses*--A great many thoroughbred draft and roadsters are bred in this county.

*Swine*--Have done well, and are generally of good breeding, being Poland Chinas, Duroc Jerseys and Chester Whites.

*Sheep*—Are principally mutton class.

*Poultry*—Breeders are confining themselves to varieties that make the best farm fowls. Poultry in this county is called ''The Mortgage Lifter.''

*Bees*—This industry has increased one hundred per cent in the last five years, but the past season was a very poor one for the production of honey.

*Drainage*—The greater part of the low and flat lands in this county have been tiled, which has materially increased the price of same.

*Other industries*—Pella has a factory that employs thirty men in the manufacturing of automatic straw stackers and self feeders for threshing machines; a canning factory that packed two million cans of tomatoes the past season, and a pickling plant that put up twelve thousand bushels of pickles.

*Lands*—Are increasing in price, some selling as high as $125 per acre.

*Report of fair*—Held at Pella, September 27th, 28th and 29th. The fair was a success both in point of exhibits and financially. Premiums were paid in full, and all exhibitors, visitors and concessioners were well pleased. No gambling or immoral shows were permitted on the grounds, the policy of the managers being to give a good, clean agricultural exhibition, which course has proven profitable by bringing out a good attendance and thereby permitting us to pay all premiums in full, and usually have a balance with which to add needed improvements.

Entries in the horse department were not as large as last year, but the individuals were of better class.

The exhibit in the cattle department was somewhat smaller than last year, owing to some disease among herds at time of fair, from which they have now fully recovered.

The swine exhibit was large, and many excellent animals were shown.

All other departments were well filled with good exhibits.

## MILLS.

*I. J. Swain, Malvern, Iowa, October 20, 1904.*

The general condition of crops in this county has been very good, the season being very favorable.

*Corn*—The greater part of the crop is out of danger of frosts at this writing, and indications are that it will yield on an average of thirty bushels per acre, and is of excellent quality.

*Oats*—Yielded on an average about twenty bushels per acre, but of an inferior quality, being injured seriously by rust.

*Wheat*—This crop was practically a failure on account of rust, and a large per cent was not cut.

*Rye*—Small acreage, but yield and quality were good.

*Barley*—Very little sown.

*Flax*—None grown.

*Buckwheat*—None sown.

*Millet*—A good yield, but was damaged somewhat by wet weather at cutting time.

*Sorghum*—None raised.

*Timothy*—Yielded a large crop of hay and was generally put up in good condition.

*Clover*—An unusually large yield, and was put up in good condition.

*Prairie hay*—Very little left in this county except on bottom lands, which yielded well and was put in excellent condition.

*Other grains and grasses*—Were good, and especially blue grass pastures.

*Potatoes*—Much above the average year in yield and were of excellent quality.

*Vegetables*—All kinds were good.

*Apples*—Yield was somewhat light but were of fine quality.

*Other fruits*—All small fruits, and particularly strawberries, raspberries and blackberries yielded an abundant crop and were of excellent quality.

*Cattle*—Have done well; a noticeable improvement in the class being bred. No disease reported.

*Horses*—Doing well, no disease; steady advancement in breeding; prices good.

*Swine*—Pig crop is considerably below the average. Some disease is reported among late pigs.

*Sheep*—Very few raised in this county. A few are fed for mutton.

*Poultry*—Is extensively raised, and has done well the past season.

*Bees*—Very few raised or kept in this county.

*Drainage*—A great deal of attention has been given this the past season.

*Lands*—Range in price from $60 to $100 per acre, but very few transfers being made. Soil is unsurpassed in depth and fertility.

*Report of fair*—Held at Malvern, September 6th, 7th and 8th. The weather was very favorable, attendance was good, the exhibits in all departments were large and of excellent quality. Competition in all live stock classes was sharp, and great interest was manifested throughout the judging.

## MONTGOMERY.

*F. S. Schadel, Red Oak, Iowa, September 24, 1904.*

Crops generally have been very good, although the season has been somewhat cool and backward.

*Corn*—Promises a good crop if killing frosts do not come before it has fully matured.

*Oats*—A very uneven crop, some fields yielding a large crop and of excellent quality, while others were very light.

*Wheat*—A great deal of damage was done by rust, and the yield is not up to the average of former years.

*Rye*—Very little raised.

*Barley*—None sown.

*Flax*—None raised.

*Buckwheat*—None raised.

*Millet*—None raised.

*Sorghum*—None raised.

*Timothy*—Yielded a large crop of hay and was put up in excellent condition.

*Clover*—Very little grown.

*Prairie hay*—Yielded a large crop and was put up in good condition.

*Other grains and grasses*—Pasturage has been exceptionally good.

*Potatoes*—Yielded a large crop, and were of good quality.

*Vegetables*—Did well.

*Apples*—An excellent crop, both in quality and yield.

*Other fruits*—Did well, and especially the peach crop.

*Cattle*—Have done well but not as many being fed for beef as usual.

*Horses*—The usual number of colts foaled, and are doing well.

*Swine*—A great many raised and there is increased interest in the raising of thoroughbred types.

*Poultry*—Has been very profitable, the demand being good and high prices being paid.

*Bees*—Very few in this county.

*Other industries*—The raising of sweet corn for canning purposes has proven a very profitable industry.

*Lands*—Prices remain the same as last year, with few transfers.

*Report of fair*—Held at Red Oak, August 15th, 16th, 17th, 18th and 19th. Favorable weather prevailed throughout the days of the fair, the attendance was good, and entries in all departments were large. The exhibit of cattle was the largest ever had, and our hog barns were full to overflowing. The display of farm products was the best ever made in the history of the society, as was also the display in Foral Hall. Every one was well pleased and the fair was pronounced a success in every particular.

## MUSCATINE.

*Geo. W. Gause, West Liberty, Iowa, September 17, 1904.*

Crops have been very good, although the season has been somewhat late.

*Corn*—This crop is about two weeks late and the prospects are that the yield will be less than the average one. Many fields were blown down in August, and thereby damaged to some extent. A light frost visited this district on the fifteenth of September.

*Oats*—Yielded an average crop and were of excellent quality.

*Wheat*—None sown.

*Rye*—None grown.

*Barley*—Yielded well and was of excellent quality.

*Flax*—None raised.

*Buckwheat*—None sown.

*Millet*—None sown.

*Sorghum*—Very little planted except on sandy bottom land along the Cedar River, and prospects are at this time that it will yield a good crop.

*Timothy*—An average crop. Meadows, at this writing, look very bad, owing to an insect at root killing a great deal of it out, and the dry weather which has prevailed since harvest.

*Clover*—The greater part of it was winter-killed, but new sowing looks very good.

*Prairie hay*—None in this county.

*Other grains and grasses*—Blue grass pastures have been excellent.

*Potatoes*—Not extensively raised, but enough for home consumption.

*Apples*—An abundant crop, being the largest raised for years.

*Other fruits*—Plums, fair; grapes, excellent; peaches, a failure; strawberries, good; cherries, a short crop.

*Cattle*—Have done well; fewer are being fed for beef than usual; principal breeds raised are Shorthorns and Jerseys.

*Horses*—This county ranks second to none in the State in the matter of breeding of fine draft and road horses.

*Swine*—The usual number was raised the past season, and are in a healthy condition, no disease of any kind being reported.

*Sheep*—Very few raised in this county.

*Poultry*—Have done well.

*Bees*—Very few in this county.

*Drainage*—Natural drainage is excellent, and all low, wet places are well tiled.

*Lands*—Several farms have changed hands the past year, at an advanced price over that of any previous year. Average price is $100 per acre.

*Report of fair*—The Union District Agricultural Society held its forty-third annual exhibition September 16th, 17th, 18th and 19th, and in many respects it was a record breaker, notwithstanding one rainy day, which necessitated holding over of the fair for one day.

The displays in all departments were very creditable, and especially in the hog department, in which the entries were so many that our accommodations were not large enough and it necessitated building an additional barn, at a cost of $100.

All classes in the speed department were well filled, the entry list being the largest ever had in the history of the society.

All other departments were well filled with excellent exhibits, and the fair was pronounced a success in every particular.

## MUSCATINE.

*Thomas Boot, Wilton Junction, Iowa, September 23, 1904.*

The season has been cool and dry, and while small grain yielded a good crop corn is not matured at this writing and is not well filled.

*Corn*—Present prospects are that it will yield from thirty-five to forty bushels per acre.

*Oats*—Were of good quality and yielded from twenty-five to forty bushels per acre.

*Wheat*—Small acreage, but was of good quality and yielded well.

*Rye*—Good quality.

*Barley*—Yielded from twenty-five to thirty bushels per acre, and was of excellent quality.

*Buckwheat*—None sown.

*Millet*—None sown.

*Sorghum*—Small acreage, but yielded a good crop.

*Timothy*—Yielded on an average of one and one-half tons per acre, and was put up in excellent condition.

*Clover*—Winter-killed.

*Prairie hay*—None in this county.

*Potatoes*—Were of good quality, but yield was not large.

*Vegetables*—Good.

*Apples*—Yield about two-thirds of the usual crop, but were of good quality.

*Other fruits*—Cherries, good; plums, fair; peaches, poor.

*Cattle*—Are thin in flesh, owing to poor pasturage.

*Horses*—Are thin in flesh, owing to poor pasturage.

*Swine*—Spring crop of pigs was light, owing to the weather being cold and wet.

*Sheep*—Very few raised in this county.

*Poultry*—Not as large a number raised as usual, owing to cold spring and rats killing a large number of them.

*Bees*—Made no honey to speak of the past season.

*Drainage*—Some tiling is being done.

*Lands*—Range in price around $100 per acre.

*Report of fair*—Held at Wilton Junction, September 6th, 7th and 8th, and was a success in every particular, the attendance being good, and every department well filled with excellent exhibits.

## O'BRIEN.

*R. C. Jordan, Sutherland, Iowa, September 24, 1904.*

Crops have been very good, although the season has been somewhat late.

*Corn*—It is estimated that at this time the crop is six weeks late, but with favorable weather will be of fair quality and will yield from twenty-five to thirty bushels per acre.

*Oats*—Were of excellent quality, and yielded from forty to seventy bushels per acre.

*Wheat*—Very little sown.

*Rye*—Very little sown.

*Barley*—An unusually good crop, both in quality and yield.

*Flax*—None raised.

*Buckwheat*—None raised.

*Millet*—Small acreage, but yielded well.

*Sorghum*—Small acreage.

*Timothy*—Yielded a large crop and was put up in excellent condition.

*Clover*—Yielded an excellent crop of hay.

*Prairie hay*—Good.

*Other grains and grasses*—Spelt or German wheat, is being raised to some extent, and yielded a good crop the past season.

*Potatoes*—A large yield, and generally were of good quality, although some little rotting was noted.

*Vegetables*—Were the best raised in years.

*Apples*—Were excellent, being the best crop ever raised in this county.

*Other fruits*—Were good.

*Cattle*—Fat cattle are very scarce in this county; young cattle plentiful.

*Horses*—Not very plentiful; prices range high.

*Swine*—A good crop of pigs was raised.

*Sheep*—Very few in this county, but did well the past season.

*Poultry*—Did well, and are selling at good prices.

*Bees*—Gathered a good crop of honey.

*Drainage*—Natural drainage is not very good, and a great deal of tiling is being laid.

*Lands*—There is practically no land on the market in this district.

*Report of fair*—Held at Sutherland, August 31st, September 1st, 2d and 3d. The week was a very rainy one and the attendence was not as good as would have been had the weather been more favorable. The association will pay all expenses and premiums in full, and are well satisfied with the outcome of the fair, taking everything into consideration.

## PAGE.

*C. E. Young, Shenandoah, Iowa, October 27, 1904.*

The general condition of crops the past season has been excellent.

*Corn*—Will yield a larger and better crop than was anticipated early in the season.

*Oats*—An excellent crop.

*Wheat*—A good average crop, both in quality and yield.

*Timothy*—Yielded a good crop and commands a fair price.

*Clover*—Good.

*Prairie hay*—Best crop for several years.

*Other grains and grasses*—Were good.

*Potatoes*—Yielded an unusually large crop, and were of excellent quality.

*Vegetables*—All kinds were good.

*Apples*—Crop not as large as last year, but are commanding a good price.

*Other fruits*—Yielded well and were of excellent quality.

*Cattle*—Have done well, and large breeders in this county report a good trade in young stock.

*Horses*—Good prices are being paid, and breeders look forward for an increased demand.

*Swine*—Have done well, and are bringing high prices at sales.

*Sheep*—Very few raised in this county, but breeding is of better class.

*Poultry*—Has been very profitable, high prices being paid.

*Bees*—Quite a number are engaged in this industry, and report that the past season has been a very profitable one.

*Drainage*—The natural drainage in this county is very good, the land being rolling.

*Other industries*—Are manufacturing of plows, wagons, gloves and mittens, suspenders, a canning factory, flour mills and nurseries.

*Lands*—Are selling at high prices.

*Report of fair*—Held at Shenandoah, August 8th, 9th, 10th, 11th and 12th. With the exception of the first day the weather was very favorable, and the attendance was good, aggregating twenty thousand visitors. Exhibits in every department were large and excellent in quality, and the fair was declared a success in every particular.

## PALO ALTO.

*P. V. Hand, Emmetsburg, Iowa, October 22, 1904.*

The season has been cold and wet, and spring planting was somewhat retarded thereby. However, a larger acreage than usual was planted of all crops, and they have generally yielded very good.

*Corn*—Will yield on an average of forty bushels per acre and is of good quality. No killing frost visited this district until October 5th.

*Oats*—Yielded an excellent crop and are of good quality, overrunning machine measure from eight to ten pounds per bushel.

*Wheat*—Small acreage; yielded from twelve to fifteen bushels per acre, and was of fair quality.

*Rye*—Small acreage sown, but yield and quality good.

*Barley*—Yielded from forty to forty-five bushels per acre and was of excellent quality being the best crop ever raised in this county.

*Flax*—None raised.

*Buckwheat*—Very little sown, but will yield a fair crop.

*Millet*—A larger acreage planted than usual and yielded a fair crop.

*Sorghum*—None raised.

*Timothy*—Yielded an unusually large crop and as the season was dry at harvest time it was put up in good condition.

*Clover*—Is being more extensively raised each year, and the crop the past season was above the average in yield and was put up in good condition.

*Prairie hay*—This product is becoming scarcer each year and most of it is now raised on bottom lands. These lands were overflowed last year which prevented cutting of the grass, and where the old grass was burned off this year the crop was fairly good but was very weedy.

*Other grains and grasses*—Blue grass pasturage has been excellent, and dairy cattle have been very profitable.

*Potatoes*—The largest crop raised for several years and were of excellent quality; price on market ranges from twenty to thirty cents per bushel.

*Vegetables*—Turnips, beets, carrots, tomatoes, etc., were on the market in abundance all season, and farmers report storing away in their cellars a good supply for winter use.

*Apples*—Early varieties yielded above the average crop and were of good quality. Very few winter apples raised.

*Other fruits*—Strawberries yielded a large and excellent crop, while all other fruits only did fairly well.

*Cattle*—Are in excellent condition, as pasturage has been good. A greater number will be fed for beef this year than last.

*Horses*—Farmers are beginning to realize the value of raising a better grade of horses and a great many imported stallions are being brought in.

*Swine*—Have done well, and no disease is reported. Not as many fed the past season as usual, owing to the light corn crop of last year.

*Sheep*—Are not extensively raised in this county, there being only two or three flocks of from five to six hundred sheep.

*Poultry*—Has done well the past season.

*Bees*—Only a few in this county.

*Drainage*—A great deal of tiling has been laid the past season as natural drainage is not very good.

*Other industries*—The dairy industry is a very profitable one, there being sixteen creameries in this county.

*Lands*—From an average price of $25 per acre in the year 1895 land has steadily advanced in price until it is now worth on an average of $60 per acre in this county.

*Report of fair*—Held at Emmetsburg, September 20th, 21st, 22d and 23d. While the attendance was not as good as usual, owing to the weather being very cool, all departments were well filled with excellent exhibits and all premiums and expenses were paid in full, and a small balance was left in the treasury.

## POCAHONTAS.

*R. M. Harrison, Fonda, Iowa, October 15, 1904.*

Although the forepart of the season was wet and cold, and all crops were backward, the weather gradually improved and crops matured and yielded well.

*Corn*—With the exception of that which was planted on a few low lying, wet places, the crop will be good, and will average about forty bushels per acre of good grade.

*Oats*—Averaged about forty bushels per acre and was of excellent quality, overrunning in weight.

*Wheat*—Small acreage, but yielded on an average of fourteen bushels per acre, and was of fair quality.

*Rye*—None raised.

*Barley*—Yielded on an average of thirty-five bushels per acre and was of fair quality.

*Flax*—None sown.

*Buckwheat*—None raised.

*Millet*—Yielded a large crop and was put up in good condition.

*Sorghum*—None raised.

*Timothy*—Yielded a large crop, and as the weather was very favorable in haying season, it was put up in excellent condition.

*Clover*—An exceptionally heavy yield and was put up in good condition.

*Prairie hay*—An exceptionally heavy yield and was put up in good condition.

*Potatoes*—Yielded a large crop but some are not keeping well since being dug.

*Vegetables*—The yield of all varieties was exceptionally heavy and of excellent quality.

*Apples*—A fair crop, both in quality and yield.

*Other fruits*—Did well.

*Cattle*—Less than the usual number being fed for beef. Breeding and raising of thoroughbreds is increasing, all the leading breeds being represented.

*Horses*—Good animals are scarce, owing to high prices paid by eastern buyers, and large numbers shipped out. A great deal of breeding is being done.

*Swine*—Mostly thoroughbreds raised, and have done well the past season; no disease reported.

*Sheep*—Not generally raised in county but there is a few breeders of thoroughbreds and the business is increasing.

*Poultry*—A great many have been raised the past season and have done well.

*Bees*—Have done well the past season, and the industry is increasing in this county.

*Drainage*—A great deal of tiling has been laid, and a number of drainage districts have been organized under the new law.

*Lands*—Owing to wet seasons land values have depreciated to some extent, and now range in price from $55 to $80 per acre.

*Report of fair*—The Big Four District Fair Association held its annual exhibition at Fonda, August 2d, 3d, 4th and 5th. The weather was favorable, attendance large, and exhibits large and of excellent quality in all departments except that of agriculture, which owing to the early dates upon which fair was held was light. The exhibit in the swine department was exceptionally large and many good animals were shown.

In point of exhibits and entertainment furnished, the meeting was pronounced the most successful one ever held by the society.

## POTTAWATTAMIE.

*Caleb Smith, Avoca, Iowa, October 12, 1904.*

The weather conditions the past season has been very favorable for all kinds of agricultural products, with the exception of spring wheat, which was almost a failure. At this writing no killing frost has visited this district and pasturage is in excellent condition.

*Corn*—Of better quality than last year. In some fields the stand was thin, owing to poor seed, and considerable replanting was done. It is maturing well and promises to yield a large crop.

*Oats*—The best crop had for years, both in quality and yield.

*Wheat*—Yielded a light crop and was of unmarketable quality.

*Other grains*—Very little rye, barley, flax, buckwheat, millet or sorghum raised in this county.

*Timothy*—Yielded from one and one-half to two tons per acre, of excellent quality and is bringing on the market an average of $6 per ton.

*Clover*—Yield and quality good; considerable was cut for seed, which yielded well; young clover has made the best stand seen for years.

*Prairie hay*—Very little wild hay left in this county excepting on low places, which yielded well and as the season was favorable at cutting time it was generally put up in good condition.

*Potatoes*—Yielded an unusally large crop and were excellent in quality.

*Fruits*—Did well, with the exception of winter apples which are not as plentiful as last year.

*Cattle*—Are in good condition; principal breeds raised are Shorthorns and Polled Angus. Prices for grades are not as high as last year. Considerable dairying is carried on in this district.

*Horses*—Have done well, demand and prices being good. There is an increase in the number of colts being raised.

*Swine*—A great many raised the past year, and no disease is reported among them. This is one of the leading industries of the county, and a great many thorougbreds are raised and sold annually.

*Poultry*—A large number was raised the past season, and have proven very profitable.

*Report of fair*—Held at Avoca, September 13th, 14th, 15th and 16th. Although the weather the first two days was very unfavorable the exhibits in every department were well filled, and the attendance was much better than expected. All premiums and expenses were paid in full, and the fair, as a whole, was a very satisfactory one.

## POWESHIEK.

*James Nowak, Malcom, Iowa, October 29, 1904.*

The season has been a very favorable one for agricultural products with the exception of a late spring, but the weather conditions since May 15th have been almost ideal.

*Corn*—Will yield on an average of forty bushels per acre, and is of good quality.

*Oats*—Yielded on an average of thirty-seven bushels per acre, and were of fair quality. Price, fair.

*Wheat*—There is very little raised in this section, but yielded a medium crop of fair quality, and commanded a good price.

*Rye*—Small acreage, but yielded a fair crop and was of good quality.

*Barley*—Yielded an average crop and was of good quality; price, fair.

*Flax*—None sown.

*Buckwheat*—Small acreage, but yielded a fair crop and was of good quality.

*Millet*—Very little raised.

*Sorghum*—Small acerage, quality good and yield excellent.

*Timothy*—Yielded on an average of one and three-fourths tons per acre, and was put up in excellent condition; not so high in price as last year.

*Clover*—Fair in quality, but yielded a little below the average crop.

*Prairie hay*—None raised.

*Potatoes*—Yielded an unusually large crop and were of excellent quality; some yielded as high as four hundred bushels per acre. Local price, twenty-five cents per bushel.

*Vegetables*—Did well.

*Apples*—Of fair yield and good quality; prices range from fifty to seventy-five cents per bushel.

*Other fruits*—Cherries, plums, grapes and pears yielded an excellent crop, while peaches were almost a total failure.

*Cattle*—Are in good condition and no disease is reported. Beef cattle are low in price.

*Horses*—In good demand and high prices being paid.

*Swine*—A great many raised and are in good condition, no disease being reported. Prices somewhat lower than last year.

*Sheep*—Very few raised in this county, but are in good condition, and have been profitable to those who understand the care of them.

*Poultry*—Has done well, the demand being good and prices fair.

*Bees*—The honey crop was not as large as usual.

*Drainage*—A great deal of tiling is being laid.

*Lands*—Prices advancing steadily and now ranges from $60 to $125 per acre

*Report of fair*—Held at Malcom, August 16th, 17th and 18th. The weather was favorable, exhibits in every department large and of excellent quality, and the attendance being good made the fair a success in every particular.

## RINGGOLD.

*F. E. Sheldon, Mt. Ayr, Iowa, September 22, 1904.*

Crops generally have been very good, although the season was unusually cool and wet at seeding time.

*Corn*--Will yield about two-thirds of a full crop, and indications are that there will be considerable soft corn.

*Oats*--Were of excellent quality, but made a light yield, owing to the poor quality of seed sown.

*Wheat*--None raised.

*Rye*--Very little raised

*Barley, flax, buckwheat*--None sown in this county.

*Millet*--Very little raised.

*Sorghum*--None planted.

*Timothy*--Yielded a good crop both in hay and seed.

*Clover*--Yielded a good crop of hay, and prospects are for a fair crop of seed.

*Prairie hay*--None grown.

*Other grains and grasses*--Blue grass pastures were excellent, and the yield of seed was never better.

*Potatoes*--The largest crop raised for years, and were of excellent quality.

*Vegetables*—Were good.

*Apples*—Fall varieties yielded a large crop and were of excellent quality, while winter varieties were only fair.

*Other fruits*—Were good.

*Cattle*—Have done well. Feeders and butchers are cheap, while dairy cows command good prices.

*Horses*—The usual number raised, and are in good condition. Good prices are being paid for heavy drafts.

*Swine*—The usual number raised, and no disease is reported. There is a noticeable improvement in the grade being raised.

*Sheep*—Not as many raised as formerly, but have proven profitable the past season.

*Poultry*—An increase in numbers raised, and command good prices.

*Bees*—Did not do very well this season.

*Lands*—Owing to short crops the past three years prices have depreciated to some extent, although well drained lands have held up in price.

*Report of fair*—Held at Mt. Ayr, September 6th, 7th, 8th and 9th. Exhibits in every department were large and of a good quality, and while the attendance was not as large as usual, all premiums were paid in full, and the fair was pronounced a success, financially and otherwise.

## SAC.

*W. T. Highland, Sac City, Iowa, October 1, 1904.*

The season has been very favorable for agricultural products, and generally crops have been very good.

*Corn*—Crop will be a good one both in quality and yield.

*Oats*—Fair.

*Wheat*—Poor, both in quality and yield.

*Rye*—Very little sown in this county, but yielded a fair crop.

*Barley*—An excellent crop.

*Flax*, *Buckwheat*—None grown.

*Millet*—Did very well.

*Sorghum*—Small acreage, but yielded well.

*Timothy*—Good.

*Clover*—Good.

*Prairie hay*—Excellent.

*Other grains and grasses*—Did well.

*Potatoes*—Yielded a large crop and were of excellent quality.

*Vegetables*—Did well.

*Apples*—Only a fair crop.

*Other fruits*—Did well.

*Cattle*—The usual number raised and are in good condition.

*Horses*—Not as many raised as last year.

*Swine*—The usual number raised, but are only in a fair condition, owing to high price of feed.

*Drainage*—A great deal of tiling is being laid.

*Lands*—Are the same in price as last year, but very few transfers are being made.

*Report of fair*—Held at Sac City, August 9th, 10th, 11th and 12th. The weather was favorable, attendance good, and exhibits in every department were large and of excellent quality.

## SHELBY.

*L. H. Pickard, Harlan, Iowa, October 26, 1904.*

Crops in general have been very good, although the planting season was about two weeks late, but a very favorable fall has given the corn crop ample time in which to mature.

*Corn*—A larger acreage planted than usual, and will be an excellent crop both in quality and yield.

*Oats*—Yielded well and were of good quality.

*Wheat*—A small yield, but were above the average in quality.

*Rye*—Very little raised.

*Barley*—An average crop.

*Flax*—None raised.

*Buckwheat*—Small acreage, but yielded fair and was of good quality.

*Millet*—Yielded a very good crop, although acreage sown was very small.

*Sorghum*—Small acreage, but yielded well.

*Timothy*—Very little raised except as sown with clover crop.

*Clover*—Excellent both in quality and yield.

*Prairie hay*—Very small acreage, but yielded well and was put up in good condition.

*Potatoes*—Yielded a very large crop and were of good quality.

*Vegetables*—All kinds were much above the average both in quality and yield.

*Apples*—Yielded a fair crop, but market was very poor.

*Other fruits*—Grapes yielded a very fair crop, while cherries were an exceptionally good crop both in quality and yield.

*Cattle*—Beef breeds are raised principally in this county, there being about fifty breeders of registered Shorthorns, Polled Angus and Herefords. A few Red Polled, Holsteins and Jerseys are raised.

*Horses*—All draft breeds are represented, and a few coach and standard bred trotters are raised.

*Swine*—The principal breed raised is Poland Chinas and the next in choice are Chester Whites.

*Sheep*—Very few raised in this county, and they are principally Shropshires.

*Poultry*—Have done very well, a great many being raised and prices have been high the past season.

*Bees*—Did well, gathering a good supply of honey.

*Drainage*—Natural drainage is very good, although there is some little tiling being laid.

*Lands*—Range in price from $60 to $100 per acre, but very few transfers are being made.

*Report of fair*—Held at Harlan, September 6th 7th, 8th and 9th. Favorable weather prevailed, the attendance was good and exhibits in every department excellent.

## SIOUX.

*H. Slikkerveer, Orange City, October 12, 1904.*

Crops in general the past season have been very good.

*Corn*—Will yield on an average of thirty-eight bushels per acre, and is of good quality.

*Oats*—Yielded on an average of thirty-five bushels per acre, and were of good quality.

*Wheat*—Yielded on an average about thirteen bushels per acre and was of fair quality.

*Rye*—None raised.

*Barley*—Yielded on an average about twenty-eight bushels per acre, and was of good quality.

*Flax*—None raised.

*Buckwheat*—None raised.

*Millet*—Yielded about four tons per acre of hay, which was put up in good condition.

*Sorghum*—None raised.

*Timothy*—Yielded about two tons per acre, and was put up in good condition.

*Clover*—Yielded about three tons per acre, and was put up in good condition.

*Prairie hay*—Yielded about two tons per acre, and was put up in good condition.

*Potatoes*—Yielded on an average of one hundred and seventy-five bushels per acre, and were of excellent quality.

*Vegetables*—An unusually good crop, both in quality and yield.

*Apples*—An excellent crop, both in quality and yield.

*Other fruits*--Did well.

*Cattle*—Have done well, and there is no disease reported.

*Horses*--Are in good condition.

*Swine*—A great many raised, and no disease reported.

*Sheep*—Have done well; no disease reported.

*Poultry*—Number raised was below the average, but otherwise did well.

*Bees*--Have done well, and a good crop of honey was gathered.

*Drainage*—Natural drainage is very good.

*Lands*--Range in price from $75 to $100 per acre.

*Report of fair*—The nineteenth annual exhibition of the Sioux County Agricultural Society was held at Orange City, September 14th, 15th and 16th, and was a success in every particular. Favorable weather prevailed throughout the days of the fair, and the attendance was the largest ever had in the history of the society.

While the exhibits in the cattle and hog departments were very good, the entries were not as many as in former years.

The horticultural department had the finest exhibit ever shown, and the display of fruit and apples would have done credit to an apple and fruit country.

## SIOUX.

*W. J. McLean, Rock Valley, Iowa, October 28, 1904.*

The general condition of crops the past season have been above the average of former years.

*Corn*—At this writing, promises an average yield of thirty-five bushels per acre, and of excellent quality.

*Oats*—Yielded from thirty to sixty bushels per acre, and were of good quality.

*Wheat*—Was of uneven yield and quality.

*Rye*—Very little raised.

*Barley*—Was of fair quality and yielded on an average thirty bushels per acre.

*Flax*—Very little sown.

*Buckwheat*—Very little sown.

*Millet*—Small acreage, but yielded well.

*Sorghum*—Very little planted.

*Timothy*—Yielded well and was put up in good condition.

*Clover*—Crop was light, but was put up in good condition.

*Prairie Hay*—Very little raised in this section.

*Other grains and grasses*—Some little alfalfa was sown and did well the past season.

*Potatoes*—Yielded well and were of excellent quality.

*Apples*—Very few orchards, but yielded well this year.

*Other fruits*—Were good, and especially plums and cherries which yielded an unusually large crop.

*Cattle*—Have done well, owing to there being excellent pasturage all season.

*Horses*—Did well.

*Swine*—Not the usual number raised, owing to cold, wet spring. No disease reported.

*Sheep*—Have done well.

*Poultry*—The usual number were raised, and prices have been high.

*Bees*—Very few kept, but number is increasing each year.

*Drainage*—Natural drainage is very good.

*Report of fair*—The Rock Valley District Fair Association held its annual exhibition at Rock Valley, August 31st, September 1st and 2d, and while the weather was unfavorable the first two days which cut down our attendance to some extent, the exhibition in every department were large and of excellent quality.

## STORY.

*Theo. P. Worsley, Nevada, Iowa, October 24, 1904.*

The season has been very favorable for crops, and as a whole they have been excellent.

*Corn*—It is estimated that there is one hundred and twenty-three thousand acres of this cereal planted in this county, and it will yield on an average of forty bushels per acre and of good quality.

*Oats*—About forty-nine thousand acres planted and yielded from twenty to forty-five bushels per acre, of good quality, weighing on an average of thirty pounds to the measured bushel.

*Wheat*—Five hundred acres of spring wheat sown, and yielded on an average of fourteen bushels per acre.

*Rye*—About five hundred acres sown, and yielded a fair crop.

*Barley*—Yielded well and was of good quality; about one thousand acres sown.

*Flax*—None raised.

*Buckwheat*—None raised.

*Millet*—About five hundred acres sown, mostly in spots that were too wet for corn.

*Sorghum*—Only small acreage planted.

*Timothy*—There is about eleven thousand acres in timothy in this county, and the past season yielded on an average of one and one-fourth tons per acre, and was put up in good condition.

*Clover*—The greater part of it was winter-killed, and that which was not yielded only a light crop not exceeding one ton per acre.

*Prarie hay*—Yielded on an average of one and one-half tons per acre, and was put up in good condition. About four thousand acres used for this purpose in this county.

*Potatoes*—It was estimated that there was one thousand and sixty acres planted in this county; the yield was large and quality excellent.

*Apples*—The yield was large, both in fall and winter varieties.

*Cattle*—Only about one-half the usual number being fed for beef. There is a noticeable increase in the numbers being raised, as well as an improvement in the quality.

*Swine*—Twenty per cent decrease in the number raised over that of last year, but have done well and are free from disease.

*Sheep*—Very few raised in this county.

*Poultry*—Chickens are plentiful, as are also ducks, while turkeys are not so plentiful, owing to the cold, wet spring causing many of them to die.

*Report of fair*—Held at Nevada, August 30th, 31st and September 1st, admission to the grounds being charged only on the two latter days. The weather the first day, Wednesday, on which admission was charged was very favorable, and the attendance was large, but on Thursday rain prevailed and the attendance was very light.

The exhibits in every department were large and excellent in quality, and especially was this true of the live stock departments, which exceeded that of any former years.

## TAMA.

*A. G. Smith, Toledo, Iowa, October 1, 1904.*

Crops have been very good, although the forepart of the season was somewhat cool and backward.

*Corn*—Was late in planting, but favorable ripening weather and without killing frost until September first, the crop is of good quality and promises to yield well.

*Oats*—Average about twenty-five bushels per acre, of fair quality, and were over in weight to the measured bushel.

*Wheat*—The greater part of the spring wheat was destroyed by rust, and there is very little winter wheat raised in this vicinity.

*Rye*—Very little raised, except by the Bohemian element for bread, but yielded well, and was of good quality.

*Barley*—Yielded on an average of twenty bushels per acre, and was of good quality.

*Flax*—Very little sown.

*Buckwheat*—None sown.

*Millet*—Very little sown.

*Sorghum*—This is almost a forgotten industry, but that which was raised yielded about sixty-five gallons of syrup to the acre.

*Timothy*—The seed crop was excellent yielding about five bushels per acre, while the hay crop was not so good.

*Clover*—Was mostly frozen out last winter, but that which survived yielded a fair crop.

*Prairie Hay*—Very little raised in this county.

*Potatoes*—A fair yield and were of excellent quality. Market price twenty-five to thirty cents per bushel.

*Vegetables*—Did well.

*Apples*—An unusually large crop, and were of good quality. A great many of the summer variety went to waste on account of there being no market for same. Several car loads of the winter variety were shipped.

*Other fruits*—Did fairly well.

*Cattle*—Are in fair condition. Pasturage short. Lower prices than usual are being obtained at fall sales. Not many are being fed for beef, owing to the prospect of this year's corn crop bringing forty cents per bushel.

*Horses*—Have done well; are generally of good grades and command high prices.

*Swine*—The season for pigs was not very good, but quality of those raised are good and command fair prices. Less than the usual number fattened this summer, owing to the high price of corn.

*Sheep*—There is only a few scattering herds in this county.

*Poultry*—This industry has grown rapidly, and a great many are raised by every farmer.

*Bees*—Very few kept, and owing to the scarcity of clover the past season, but little honey was gathered.

*Drainage*—A great deal of tiling is being laid.

*Lands*—Not as many transfers made as last year, but that which was sold ranged in price from $60 to $105 per acre.

*Report of fair*—Held at Toledo, September 27th, 28th, 29th and 30th. While the weather was much better than we have been favored with during our fairs for the past five years, it was threatening, and for this reason kept away many who had a great distance to come by team. Our total gate receipts were about two thousand dollars.

The exhibit in the horse department was fair, and in the cattle department Shorthorn and Red and Black Polled were well represented. In the swine department nearly three hundred head were shown which were in a large majority Poland Chinas, although the Berkshires, Chester Whites and Duroc Jerseys had a fair representation. The poultry exhibit was not as large as expected, considering the great number raised in this county. Expert judges were used in all live stock departments, to the general satisfaction of all.

In the agricultural, horticultural and pantry stores the exhibits were the largest and finest ever had in the history of our fair.

The exhibits from the rural and city schools was very good, and much interest was manifested therein. In the Art Hall there was a good exhibit of art work, ladies' handiwork, etc.

## TAYLOR.

*J. J. Laws, Bedford, Iowa, September 20, 1904.*

Taking everything into consideration the crop prospect is the worst in years, owing to the excessive rainfall in the month of April, which amounted to more than six inches in this district. Farmers were unable to get their seeding done, and the rains continued through the month of May and the succeeding months.

*Corn*—Will make about half a crop providing killing frosts do not come for two or three weeks. A great deal of corn was planted as late as the middle of June.

*Oats*—Yielded on an average about fifteen bushels per acre.

*Wheat*—Very little raised in this county. Winter wheat yielded a small crop, and there was no spring wheat sown that I learned of.

*Rye*—Small acreage sown, but yielded a fair crop where it could be harvested.

*Barley*—None sown.

*Flax*—None raised.

*Buckwheat*—Very little sown.

*Millet*—Very little sown and what was yielded a very poor crop, owing to the excessive rainfall.

*Sorghum*—None raised.

*Timothy*—There is a large acreage of timothy in this district and the crop the past season was very good. A great deal was cut for seed and yielded from five to seven bushels per acre.

*Clover*—Yielded a good crop, but owing to the heavy rains during the time of harvesting it was not saved in the best condition.

*Prairie hay*—Small acreage, but yielded a good crop.

*Potatoes*—Acreage planted was not as large as usual, but they yielded a fair crop and were of good quality.

*Vegetables*—Were excellent.

*Apples*—An unusually large crop and were excellent in quality.

*Other fruits*—Cherries, raspberries, strawberries, blackberries and plums yielded a fair crop.

*Cattle*—Assessors' report shows thirty-five thousand head in this county They have done well the past season and no disease is reported.

*Horses*—Are in good condition, and bringing good prices. Twelve thousand assessed in county.

*Swine*—Have done well, and are free from disease.

*Sheep*—Assessors' books show about seven thousand in county. They have done well the past season.

*Poultry*—Is raised extensively in this county, and have commanded high prices the past season.

*Bees*—Did well, and honey is abundant.

*Drainage*—Has been generally neglected by the farmers in this county, and a great deal of land during a wet season is untillable.

*Lands*—Prices range the same as last year.

*Report of fair*—Held at Bedford, September 6th, 7th, 8th and 9th. Favorable weather prevailed throughout the days of the fair, and the attendance was very good, considering that a great many of the farmers were engaged in harvest. Exhibits in every department were large and of excellent quality, and all purses and premiums were paid in full.

## WAPELLO.

*L. A. Meeker, Ottumwa, Iowa, October 29, 1904.*

Crops have been very good, although the season has been somewhat backward.

*Corn*—Will yield about eighty per cent of a full crop, but is of excellent quality, owing to having ample time in which to mature as no killing frost visited this district until October 20th.

*Oats*—Yielded about sixty per cent of a full crop, and were of good quality.

*Wheat*—Very little sown.

*Rye*—Yielded a little crop.

*Barley*—Very light raised.

*Flax*—None raised.

*Buckwheat*—None sown.

*Millet*—Acreage small, but yielded a fair crop.

*Sorghum*—Yield and quality good.

*Timothy*—Yielded an excellent crop, and was put up in good condition.

*Clover*—Yielded a light crop.

*Prairie hay*—Very little raised in this county.

*Potatoes*—Yielded about eighty per cent of a full crop, and were of excellent quality.

*Vegetables*—Did well.

*Apples*—Were an average crop with former years, both in quality and yield.

*Cattle*—A great many being kept for dairy purposes. Not as many being fed for beef as usual.

*Horses*—Are scarce, and command high prices.

*Swine*—About eighty per cent of the usual number raised, but are in a healthy condition.

*Sheep*—Not as many raised as usual.

*Poultry*—A fair supply, and are in a healthy condition.

*Drainage*—A great deal of tiling is being laid.

*Report of fair*—Held at Ottumwa, August 1st, 2d, 3d and 4th. The weather was favorable, and the attendance and exhibits were very good.

## WARREN.

*Lee Talbott, Indianola, Iowa, October 3, 1904.*

The past season has been generally very favorably for most crops. Very heavy rains and cool weather the forepart of the season retarded the growth of corn to some extent, but favorable ripening weather this fall has given it ample opportunity in which to mature.

*Corn*—The indications at this time are that the crop will be an exceptionally large one, and will be of excellent quality.

*Oats*—While early in the season indications were for a good crop, later they were struck by rust, which materially reduced their weight and quality.

*Wheat*—Acreage small, but yielded a very good crop.

*Rye*—Acreage small, but yield and quality good.

*Barley*—Acreage small, but yield and quality good.

*Flax*—None raised in this county.

*Buckwheat*, *Millet*, *Sorghum*—Very little raised in this county.

*Timothy*—Yielded well and was put up in good condition. Some was cut for seed, and yielded well.

*Clover*—Yielded well and was put up in good condition. The second crop, which is now ready to cut, promises a good yield.

*Prairie hay*—Very little raised in this district, but yielded a good crop and was put up in excellent condition.

*Other grains and grasses*—Blue grass pastures were exceptionally good the past season.

*Potatoes*—Yield was unusually large, and were of excellent quality.

*Vegetables*—Did well.

*Apples*—An excellent crop of all varieties, both in quality and yield. A great many were shipped, although prices obtained were very low.

*Other fruits*—Yielded abundant crops.

*Cattle*—All farms are well stocked with Shorthorns, Herefords, Polled Angus and dairy breeds.

*Horses*—All classes are raised, but among the farmers heavy draft breeds are preferable.

*Swine*—Are raised and fattened by almost every farmer in this county. They are, indeed, the "Mortgage Lifter," and any of the good heavy breeds properly handled and cared for will do the business.

*Sheep*—Very few kept or raised in this county.

*Poultry*—Is extensively raised by all classes, and is a very profitable industry.

*Bees*—A great many are kept in this county, and in the past two seasons excellent crops of honey have been gathered.

*Lands*—Are generally rolling prairie land, with timber along streams. The soil is very fertile and adapted to all agricultural products. Coal of a good quality is found in many parts of the county.

*Report of fair*—Held at Indianola, September 13th, 14th, 15th and 16th. Fair weather prevailed throughout the days of the fair, exhibits in every department were large and of excellent quality, and the attendence was good.

## WEBSTER.

*M. J. Haire, Ft. Dodge, Iowa, September 27, 1904.*

Although the planting season was somewhat late crops generally have been usually good, owing to the lateness of killing frosts giving everything ample time in which to mature.

*Corn*—Will yield an unusually large crop, and is of excellent quality.

*Oats*—Yielded on an average thirty-five bushels per acre, and were of excellent quality.

*Wheat*—Small acreage, but yield and quality were above the average.

*Rye*—Small acreage.

*Barley*—Very little grown.

*Flax*—Very little grown.

*Buckwheat*—Small acreage.

*Millet*—A good crop, yielding from ten to fifteen bushels of seed per acre.

*Sorghum*—Very little raised.

*Timothy*—Yielded on an average two tons per acre, and was put up in good condition.

*Clover*—Yielded on an average of one-half ton per acre, and was put up in good condition.

*Prairie hay*—Small acreage, but yielded well and was put up in good condition.

*Other grains and grasses*—Did well, and especially is this true of blue grass pastures, which were excellent.

*Potatoes*—Yielded on an average of one hundred and fifty bushels per acre, and were of good quality.

*Vegetables*—Did well.

*Apples*—The largest crop raised in years, and were of excellent quality.

*Other fruits*—Were abundant and of good quality.

*Cattle*—Have done well. There is a noticeable improvement in the grade of cattle being raised, there being many fine herds of Shorthorns, Herefords, Polled Angus, Red Polled, Holstein and Swiss.

*Horses*—The grades raised are improving each year, and many imported horses are being brought in.

*Swine*—Principal breeds raised are Poland Chinas, Duroc Jerseys and Berkshires. A great deal of interest is being taken in the improvement of breeding of hogs.

*Sheep*—Very few are raised in this county.

*Poultry*—This industry is receiving considerable attention, as farmers appreciate that it is a very profitable one.

*Bees*—Very few are raised or kept in this county.

*Drainage*—This question is uppermost in the minds of most farmers, as it is the most vital subject they have to contend with. A great deal of tiling is being laid.

*Other industries*—The mining of gypsum is an important and very profitable one, as is also the mining of coal and manufacturing of brick, tile, pottery, and cement blocks for building purposes.

*Report of fair*—Held at Fort Dodge, September 28th, 29th, 30th and October 1st. This was the second fair since the organization of the new association, and we were very much pleased with the interest taken in same by both farmers and merchants. Although it rained on the second day of our fair, the attendance on the whole was very good, and every one was well pleased and pronounced it a success in every particular.

## WEST POINT DISTRICT.

*John Walljasper, West Point, Iowa, October 23, 1904.*

Crops have been good, as the season has been very favorable for the growth of all agricultural products.

*Corn*—Acreage planted large, and will be an excellent crop both in quality and yield.

*Oats*—Yielded well and were of excellent quality.

*Wheat*—Yield and quality fair.

*Rye*—Small acreage, but yielded well and was of good quality.

*Barley*—Small acreage, but yielded fair and was of good quality.

*Flax*—Very little sown.

*Buckwheat*—Small acreage sown, but prospects are for a good crop.

*Millet*—Yielded a very good crop.

*Sorghum*—Yield and quality good.

*Timothy*—Yielded a heavy crop and seed was of good quality.

*Clover*—Yield and quality fair.

*Prairie hay*—Very little in this district.

*Potatoes*—An unusually large yield, and were of excellent quality.

*Vegetables*—All varieties did well.

*Apples*—Yield and quality fair.

*Other fruits*—Yielded well and were of excellent quality.

*Cattle*—Principally beef breeds are raised, including Shorthorns, Herefords and Polled Angus; some few Jerseys are kept for dairy purposes.

*Horses*—Special attention is being given to breeding of Percherons and heavy draft breeds, although a good many road horses are raised.

*Swine*—Poland Chinas, Berkshires and Chester Whites are the leading breeds raised, although of late years the Duroc Jersey is becoming more popular.

*Sheep*—Coarse, middle and fine wool flocks are raised quite extensively in this district.

*Poultry*—This industry is a very extensive and profitable one.

*Bees*—This industry is engaged in by a number of enthusiastic apiarists in this district, and is increasing in popularity.

*Drainage*—Natural drainage is very good.

*Other industries*—Flour mills, canning factories, and cheese factories can be found in the smaller places, while in the larger towns there are factories of most every nature which gives employment to thousands of people.

*Lands*—Are increasing in value, prices ranging from $50 to $125 per acre.

*Report of fair*—The West Point District Agricultural Society held its annual exhibition at West Point on August 30th, 31st and September 1st and 2d. The exhibits in every department were large and of excellent quality. The weather was very unfavorable, it raining almost the entire week, which materially cut down the attendance, but otherwise the fair was a success in every particular.

## WINNEBAGO.

*J. A. Peters, Forest City, Iowa, October 18, 1904.*

Although the past season has been somewhat cool, crops in general have been very good.

*Corn*—Was planted in good season but cold weather retarded its growth for the first sixty days. The latter part of the season was more favorable, and fully seventy-five per cent of the crop was well matured at time of first killing frost, October 6th.

*Oats*—Yielded an average of forty bushels per acre, and were exceptionally good in quality.

*Wheat*—Small acreage, but yielded an average of fifteen bushels per acre, and was of fair quality.

*Rye*—Only raised for early spring feed.

*Barley*—Yielded an average of thirty bushels per acre, and was of excellent quality.

*Flax*—None raised.

*Buckwheat*—Small acreage, but yielded on an average of fifteen bushels per acre.

*Millet*—Yielded an exceptionally heavy hay crop, which was put up in good condition.

*Sorghum*—Very little grown.

*Timothy*—A very good crop, yielding on an average of six bushels of seed to the acre, and hay crop was large, and was put up in good condition.

*Clover*—None cut for seed. Hay yielded a large crop, and was put up in good condition.

*Prairie hay*—Yielded a very good crop, averaging about two tons per acre, and bringing on the local market $4 per ton.

*Other grains and grasses*—Spelt and cow peas were raised to some extent the past season, and proved very satisfactory crops.

*Potatoes*—Yielded from seventy-five to one hundred and fifty bushels per acre, and were of excellent quality, although some have rotted quite badly.

*Vegetables*—Were unexcelled in both quality and yield.

*Apples* –Considerable attention is being given to the raising of apples, many large orchards have been recently set out. About three car loads of Wealthy and other fall varieties were shipped from this section the past season. A number of winter varieties are now being successfully grown here.

*Other fruits*—All small fruits yielded an abundant crop and were of excellent quality.

*Cattle*—More attention is being given to the breeding of a better grade of cattle, but there is yet much room for improvement. There has been no contagious diseases among cattle in this district the past season.

*Horses*—Several companies have been formed among the farmers and imported draft horses have been purchased for breeding purposes.

*Swine*—The pig crop was on an average with former years. There is less disease prevalent than for several years.

*Sheep*—Very few are raised in this district, but are reported as being free from disease the past season and have been very profitable.

*Poultry*—This is an extensive industry, and a very profitable one.

*Bees*—Very few raised or kept in this county.

*Drainage*—Since the drainage law was passed at the last general assembly much interest has been taken in the matter of tiling and drainage. Several large drainage ditches have been petitioned for, and many more petitions are being circulated. Farmers are now beginning to realize that it does not pay to own lands which are not tillable.

*Other industries*—There are two sweet corn canning factories in this county and during the past season they have put up about two million cans. Farmers are well pleased with the prices they are getting for this product, some realizing as much as $25 per acre.

*Lands*—Very few transfers have been made the past year.

*Report of fair*—Held at Forest City, October 4th and 5th, and was one of the most successful fairs ever held in this county. Many of the features of the ''old-fashioned kind'' were omitted, and it assumed more of the nature of a harvest festival. The display of corn, oats fruits and vegetables were unsurpassed in the history of the society. The Iowa State Agricultural College furnished us a competent judge of corn and the best of satisfaction was given. Great interest was manifested in the competition for premiums on corn, and there were one hundred and fifty entries. No premiums were offered on live stock.

## WINNEBAGO.

*Geo. B. Johnston, Buffalo Center, Iowa, October 15, 1904.*

Crops in general have been very good, although the season has been somewhat cool and backward.

*Corn*—Will yield about eighty-five per cent of an average crop, eighty per cent of which was well matured at time of killing frost.

*Oats*—Yielded from twenty-five to thirty bushels per acre, and were of unusually good quality, weighing from thirty to thirty-eight pounds to the bushel.

*Wheat*—Small acreage; yielded from ten to twenty bushels per acre and was of poor quality.

*Rye*—None sown.

*Barley*—Small acreage, but yielded from twenty-five to thirty-five bushels per acre and was of fair quality.

*Flax*—Small acreage; yielded from ten to fifteen bushels per acre, and was of fair quality.

*Buckwheat*—Very little grown.

*Millet*—Good, both in quality and yield.

*Sorghum*—Very little grown.

*Timothy*—Yielded a fair crop and was put up in good condition.

*Clover*—Yielded a good crop, and fall pasturage is excellent.

*Prairie hay*—Yielded a good crop and was put up in excellent condition.

*Potatoes*—An unusually large yield, and were of excellent quality.

*Vegetables*—All varieties yielded an abundant crop and were of good quality.

*Apples*—Yielded a good crop and were of excellent quality.

*Other fruits*—Did well.

*Cattle*—The usual number raised, and have done well.

*Horses*—Are in good condition; the usual number raised.

*Swine*—Only about ninety per cent of the usual pig crop. No disease reported.

*Sheep*—Not a great many raised in this district, but did well the past season.

*Poultry*—The usual number raised and have commanded good prices.

*Bees*—Honey crop is above the average.

*Drainage*—A great deal of tiling is being laid.

*Lands*—Prices range from forty-five to sixty-five dollars per acre. Very few transfers the past year.

*Report of fair*—The Buffalo Center Driving Park and Fair Association held its annual exhibition at Buffalo Center, September 27th, 28th and 29th.

## WINNESHIEK.

*H. L. Coffen, Decorah, Iowa, September 26, 1904.*

Crops generally have been up to the average with those of former years, although the season has been somewhat cool.

*Corn*—Smaller acreage planted than usual, and twenty-five per cent of it can not mature by time of killing frosts.

*Oats*—Yielded a good crop and were of excellent quality.

*Wheat*—Small acreage, and while Blue stem yielded a fair crop and was of a good quality, other varieties were damaged to a great extent by rust.

*Rye*—Small acreage sown, but yielded a fair crop and was of good quality.

*Barley*—Did well.

*Flax*—Yielded a good crop.

*Buckwheat*—Small acreage sown, and is not well filled.

*Millet*—An average crop.

*Sorghum*—None raised.

*Timothy*—Yielded a fair crop of seed, although hay crop was somewhat short.

*Clover*—The greater part of it was frozen out last winter.

*Prairie hay*—None in this county.

*Other grains and grasses*—Some little experimenting is being done in the raising of spelt, and it yielded a fair crop the past season. On the river bottoms and other marsh lands, blue joint, red top and other marsh grasses yielded a good crop.

*Potatoes*—Yielded a large crop, but are rotting to some extent.

*Vegetables*—Did well.

*Apples*—Yielded a large crop.

*Other fruits*—Were excellent, both in quality and yield.

*Cattle*—Are generally healthy and in good condition. An increase in the number raised over that of last year. Prices for ordinary grade of cattle are very low.

*Horses*—Are in good condition. Prices range from one hundred to two hundred dollars.

*Swine*—The average number raised. No disease reported.

*Sheep*—There is a noticeable increase in the numbers being raised, and are generally in good condition.

*Poultry*—Has done well, and larger numbers are being raised, owing to the high prices paid for poultry and eggs.

*Bees*—Did not do very well, owing to the failure of the clover crop.

*Drainage*—Natural drainage is very good except in the western part of the county, and tile is used successfully there.

*Other industries*—The creamery industry is a large and profitable one, there being several creameries in the county, and nearly every farmer keeps from ten to twenty dairy cows.

*Lands*—Range in price from $15 to $100 per acre, good farms bringing from $60 to $80 per acre. Very few transfers have been made the past year,

*Report of fair*—Held at Decorah, August 30th, 31st, September 1st and 2d. The exhibits in every department were large and of excellent quality. The attendance was good with the exception of that on the last day, when it rained, and the attendance was very light. However, all expenses and premiums were paid in full, and the society had a balance of about $200 in its treasury.

## WORTH.

*Bert Hamilton, Northwood, Iowa, October 18, 1904.*

Crops the past season were very good on high and well drained lands, while those on the low and undrained lands were only fair, and in some places were a total failure, owing to excessive rainfall.

*Corn*—Will yield an average of forty bushels per acre, and generally is of very good quality, although some little damage was done by early frosts.

*Oats*—Yielded a fair crop and were of good quality.

*Wheat*—Small acreage, but yielded a good crop and was of a good quality.

*Barley*—Yielded a large crop and was of excellent quality.

*Flax*—Light yield.

*Buckwheat*—Very little raised.

*Millet*—None sown.

*Sorghum*—None grown.

*Timothy*—Yielded a fair crop.

*Clover*—Yielded a good crop; none cut for seed.

*Prairie hay*—Was not of the best quality, it being very rank.

*Potatoes*—Yielded a very large crop, but are rotting to some extent.

*Vegetables*—Were excellent both in quality and yield.

*Apples*—Yielded an abundant crop both of fall and winter varieties, and were of good quality.

*Other fruits*—Were abundant.

*Cattle*—There is a noticeable improvement in the grade being raised; Shorthorns and Herefords being the principal breeds.

*Horses*—Many fine individuals are owned in this county, and farmers are giving more attention to this industry.

*Swine*—Have done well, and no disease is reported. Poland China and Chester Whites are the principal breeds raised.

*Sheep*—This industry is not engaged in extensively in this district, but they have done well the past season and are in a healthy condition. Breeds raised are principally Shropshire and Southdowns.

*Poultry*—Has done well, both birds and eggs commanding a good price on the market.

*Bees*--Very few raised or kept.

*Drainage*--A great deal of tiling and open ditching is being done in this county.

*Report of fair*—Held at Northwood, September 17th, 18th and 19th. The weather was favorable and the attendance was the largest in the history of the society. Exhibits in the live stock departments were not very plentiful, but in the agricultural department the exhibit was the largest and best ever shown at our fair, and the same was true of the exhibit in the horticultural department. All other departments were well filled with good exhibits, and the fair was pronounced a success in every particular.

## WRIGHT.

*Ralph C. Bras, Clarion, Iowa, October 10, 1904.*

The past season has been a very favorably one for all agricultural products. While, perhaps, the spring was a little too wet, summer and the harvest season was all that could be asked.

*Corn*—Was well out of harm's way at time of first killing frost, October 5th, and the crop will be the largest gathered since 1895, and is of excellent quality.

*Oats*—This crop was much above the average for the last ten years, it yielding on an average about forty-five bushels machine measure per acre, and overrun in weight about twenty per cent.

*Wheat*—Small acreage sown, but yielded from fifteen to twenty-five bushels per acre and was of good quality.

*Barley*—The acreage sown each year is increasing, as farmers are using it as early feed for their hogs. It yielded about forty-five bushels per acre the past season, and was of good quality.

*Report of fair*—Held at Clarion, September 13th, 14th, 15th and 16th.

## FINANCIAL STATEMENT OF COUNTY AND DISTRICT FAIRS, 1904.

| County or District. | Receipts. | | | | Disbursements. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Balance on hand December 1, 1903. | Receipts for 1904. | Overdrafts for 1904. | Total receipts for 1904. | Expenses for 1904. | Speed premiums paid for 1904. | Premiums paid for 1904. | Balance on hand November 1, 1904. | Total disbursements for 1904. | Indebtedness for 1904. |
| Adair | $ 167.48 | $ 2,811.90 | $ 27.69 | $ 3,007.07 | $ 1,534.67 | $ 600.00 | $ 872.40 | .......... | $ 3,007.07 | $ 800.00 |
| Adams | 2.08 | 3,831.20 | .... | 3,831.20 | 1,687.18 | 1,181.50 | 762.52 | $ 200.00 | 3,831.20 | 1,400.00 |
| Allamakee | 2.08 | 2,236.46 | ......... | 2,238 54 | 1,843 14 | ......... | 390.40 | 5 00 | 2,238.54 | 25.00 |
| Audubon | 76.56 | 2,766.22 | ... | 2,842.78 | 1,523.87 | 759 50 | 529.70 | 29.71 | 2,842.78 | 700.00 |
| Benton | .......... | 2,766.17 | 483.15 | 3,249.32 | 1,944.57 | 475.00 | 829.75 | .......... | 3,249.32 | 1,200.00 |
| Black Hawk—La Porte City district | .......... | 1,922.98 | 244.21 | 2,167.19 | 697.49 | 942.20 | 527.50 | .......... | 2,167.19 | 1,900.00 |
| Boone | ... | 1,450.80 | 255.20 | 1,706.00 | 564.00 | 740.00 | 402.00 | .......... | 1,706.00 | 900.00 |
| Buchanan | 49.30 | 2,648.10 | ......... | 2,697.40 | 1,200.00 | 188.00 | 602.55 | 706.85 | 2,697.40 | 3,400.00 |
| Buena Vista | .......... | 5,927.50 | ......... | 5,927.50 | 2,391.37 | 2,620.00 | 879.50 | 36.63 | 5,927.50 | .......... |
| Butler | 2.16 | 1,904.17 | ......... | 1,906.33 | 925.32 | 435.00 | 522.70 | 23.31 | 1,906.33 | 900.00 |
| Calhoun | .......... | 3,769.40 | 544.03 | 4,313.43 | 3,567.43 | 145.00 | 601.00 | .......... | 4,313.43 | 1,600.00 |
| Cedar—Tipton district | 6.38 | 3,152.29 | 747.94 | 3,906.61 | 2,278.56 | 957.85 | 670.20 | .......... | 3,906.61 | 1,300.00 |
| Chickasaw—Big Four district | 208.70 | 2,499.04 | ......... | 2,707.74 | 1,512.35 | 200.00 | 798.25 | 197.14 | 2,707.74 | 1,800.00 |
| Clayton | 35.17 | 3,212.70 | ......... | 3,247.87 | 1,717.18 | 725.00 | 763.00 | 42.69 | 3,247.87 | .......... |
| Clayton—Elkader district | 22.91 | 4,901.60 | 189.46 | 5,113.97 | 2,992.45 | 1,508.00 | 613.52 | ...... | 5,113.97 | 3,832.01 |
| Clayton—Strawberry Point district | 85.69 | 3,818.00 | ......... | 3,898.69 | 2,140.51 | 923.75 | 620.00 | 214.43 | 3,898.69 | 1,750.00 |
| Clinton | 392.50 | 5,837.67 | ......... | 6,230.17 | 3,681.04 | 966.00 | 1,157.50 | 425.63 | 6,230.17 | 1,783.17 |
| Clinton—Clinton district | .......... | 6,291.74 | 155.06 | 6,446.80 | 2,832.90 | 2,440.00 | 1,173.90 | .......... | 6,446.80 | 501.00 |
| Dallas | .......... | 1,565.11 | 31.00 | 1,596.11 | 562.88 | 423.93 | 609.30 | .......... | 1,596.11 | 360.00 |
| Davis | .... | 3,592.93 | .... | 3,592.93 | 1,414.98 | 1,120.00 | 1,057.95 | .......... | 3,592.93 | .......... |
| Delaware | 30.37 | 2,845.20 | ......... | 2,875.57 | 1,314.45 | 991.00 | 498.00 | 72.12 | 2,875.57 | .......... |
| Des Moines—Burlington district | .... | 3,347.16 | 71.21 | 3,418.37 | 1,487.67 | 1,669.00 | 261.70 | .......... | 3,418.37 | .... |
| Fayette | 48.62 | 3,573.10 | ......... | 3,621.72 | 2,169.72 | 614.00 | 725.25 | 112.75 | 3,621.72 | 1,000.00 |
| Floyd | .......... | 1,131.02 | ......... | 1,131.02 | 457.50 | .......... | 327.55 | 345.97 | 1,131.02 | 1,575.00 |
| Franklin | .......... | 3,387.85 | .11 | 3,387.96 | 1,396.01 | 1,220.00 | 771.95 | .......... | 3,387.96 | 1,875.00 |
| Grundy | 189.65 | 2,173.55 | .... | 2,363.20 | 1,172.49 | 584.25 | 585.71 | 20.75 | 2,363.20 | 580.00 |
| Guthrie | 133.66 | 2,929.79 | ......... | 3,063.45 | 928.91 | 1,042.50 | 751.45 | 340 59 | 3,063.45 | 1,200.00 |
| Hancock | 280.46 | 1,821.88 | 147.09 | 2,249.43 | 822.43 | 872.50 | 554.50 | .......... | 2,249.43 | .......... |
| Hardin | .......... | 5,121.30 | 265.65 | 5,386.95 | 2,269.54 | 2,150.00 | 967.41 | .......... | 5,386.95 | 965 65 |
| Harrison | .......... | 2,114.25 | 398.85 | 2,513.10 | 679.21 | 1,281.14 | 552.75 | ........ | 2,513.10 | 525.00 |
| Henry | 55.02 | 5,507.86 | ......... | 5,562.88 | 1,411.59 | 1,507 50 | 1,988.01 | 655.78 | 5,562.88 | 200.00 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Henry—Eastern Iowa district | 103.52 | 3,154.93 | | 3,258.45 | 909.67 | 1,325.00 | 1,014.50 | 9.28 | 3,259.48 | 3,125.00 |
| Humboldt | | 1,980.00 | | 1,980.00 | 1,105.75 | 347.00 | 527.25 | | 1,980.00 | 754.20 |
| Iowa—Victor district | 263.69 | 1,573.44 | 137.27 | 1,974.40 | 789.40 | 700.00 | 485.00 | | 1,974.40 | 800.00 |
| Iowa—Williamsburg district | | 2,056.00 | 29.94 | 2,085.94 | 1,054.54 | 432.50 | 598.90 | | 2,085.94 | 2,375.00 |
| Jackson | 145.35 | 4,689.65 | | 4,835.00 | 2,400.00 | 1,450 00 | 885.20 | 99.80 | 4,835.00 | |
| Jasper | 288 85 | 4,133.15 | | 4,422.00 | 1,646.16 | 1,017.00 | 1,023.00 | 735.84 | 4,422.00 | 2,400.00 |
| Jefferson | 70.09 | 4,003.15 | 275.26 | 4,348.50 | 1,004.85 | 2,500.00 | 843.65 | | 4,348.50 | 750.00 |
| Jones | | 5,384.80 | | 5,384.80 | 2,605.83 | 1,800.00 | 954.10 | 24.87 | 5,384.80 | |
| Jones—Anamosa district | 104.01 | 7,761.02 | | 7,865.03 | 4,979 19 | 2,200 00 | 511.50 | 174.34 | 7,865.03 | 4,100.00 |
| Keokuk—What Cheer district | | 4,115.05 | | 4,115 05 | 1,419.05 | 1,800.00 | 596.00 | 300 00 | 4,115.05 | 800.00 |
| Kossuth | 192.79 | 2,073.49 | | 2,266.28 | 656.79 | 300.00 | 552.50 | 756.99 | 2,266.28 | 1,200.00 |
| Lee | 325.54 | 2,302.45 | | 2,627.99 | 826.80 | 710.00 | 556.20 | 534.99 | 2,627.99 | |
| Lee—West Point district | | 1,897 08 | | 1,897.08 | 811.86 | 719.50 | 244.34 | 121 38 | 1,897.08 | 1,868.37 |
| Linn—Marion district | | 6,615.35 | 344.86 | 6,960.21 | 2,354.14 | 3,910.00 | 696.07 | | 6,960.21 | 6,150.00 |
| Linn—Prairie Valley district | | 2,108.75 | 304.16 | 2,412.91 | 705.91 | 845.00 | 862.00 | | 2,412.91 | 200.00 |
| Linn—Wapsie Valley district | | 3,098.60 | 2.26 | 3,100.86 | 1,572.11 | 668.00 | 860.75 | | 3,100.86 | 2,380.00 |
| Louisa—Columbus Junction district | 45.00 | 4,553.80 | | 4,598.80 | 1,151.60 | 1,335.00 | 1,891.75 | 220.55 | 4,598.80 | 3,900.00 |
| Louisa—Wapello district | | 7,400.82 | 14.65 | 7,415.47 | 4,474.22 | 2,070 00 | 871.25 | | 7,415.47 | 1,800.00 |
| Madison | | 1,728.26 | 95.82 | 1,824.08 | 690.17 | 760.00 | 373.91 | | 1,824.08 | 1,000.00 |
| Mahaska—New Sharon district | 12.83 | 1,669.00 | | 1,681.83 | 626.76 | 575.00 | 363.50 | 116.57 | 1,681.83 | 1,050.00 |
| Marion—Lake Prairie district | | 2,328.40 | | 2,328.40 | 762.73 | 356.00 | 597.00 | 612.67 | 2,328.40 | |
| Mills | 338.80 | 2,050.54 | | 2,389.34 | 1,044.92 | 571.98 | 710.70 | 61.74 | 2,389.34 | |
| Montgomery | 119.11 | 4,616.30 | | 4,735.41 | 2,802.47 | 1,182.45 | 617 80 | 132.69 | 4,735.41 | 2,000.00 |
| Muscatine | | 2,143.62 | 10.84 | 2,154.46 | 874.96 | 855.00 | 424.50 | | 2,154.46 | 450.00 |
| Muscatine—Union district | 168.02 | 4,443.54 | | 4,611.56 | 1,359.66 | 1,715.00 | 1,523.25 | 13.65 | 4,611.56 | |
| O'Brien | | 2,762.60 | 272.55 | 3,035.15 | 1,488.75 | 1,025.00 | 521.40 | | 3,035.15 | 1,250.00 |
| Page—Shenandoah district | 1,013.73 | 7,981.65 | | 8,995.38 | 3,557.24 | 1,468.50 | 873.20 | 3,096.44 | 8,995.38 | 300.00 |
| Palo Alto | | 1,679.00 | | 1,679.00 | 403.00 | 657.00 | 341.25 | 277.75 | 1,679.00 | |
| Pocahontas | | 4,057.90 | 283.52 | 4,341.42 | 1,715.57 | 1,950.00 | 675 85 | | 4,341.42 | 1,640.00 |
| Pottawattamie | | 3,382.10 | | 3,382.10 | 1,177.08 | 1,186.24 | 708.59 | 310.19 | 3,382.10 | 1,500.00 |
| Poweshiek—Central at Malcom | 59.65 | 3,558.80 | | 3,618.45 | 1,372.02 | 1,275.00 | 571.00 | 400.43 | 3,618.45 | |
| Ringgold | | 2,482.60 | | 2,482 60 | 791.20 | 628.50 | 1,062.90 | | 2,482.60 | 1,725.00 |
| Sac | | 3,845.13 | | 3,845.13 | 1,121.79 | 1,892.24 | 631.10 | 200.00 | 3,845.13 | 3,000.00 |
| Shelby | | 3,102.55 | | 3,102.55 | 802.10 | 1,375.00 | 925.45 | | 3,102.55 | 424.66 |
| Sioux—Rock Valley district | | 1,809.19 | 32.84 | 1,842.03 | 575.03 | 825.00 | 442.00 | | 1,842.03 | 1,500.00 |
| Sioux | .60 | 1,628.39 | | 1,628.99 | 395 34 | 625.00 | 372.60 | 236.05 | 1,628.99 | 500.00 |
| Story | | 3,133.18 | 99.84 | 3,233.02 | 862.04 | 1,670.00 | 700.98 | | 3,233.02 | 2,900.00 |
| Tama | | 3,376.49 | 136.83 | 3,513.32 | 1,820.52 | 963.50 | 729.30 | | 3,513 32 | 136.83 |
| Taylor | 56.50 | 2,117.85 | | 2,174.35 | 530.02 | 947.90 | 498.30 | 198.13 | 2,174.35 | |
| Wapello—Hedrick district | | 1,330 25 | 267.00 | 1,597.25 | 460.00 | 650.00 | 487 25 | | 1,597 25 | |
| Wapello—Ottumwa district | | 2,990.00 | 230.75 | 3,220.75 | 820.00 | 1,960.00 | 440.75 | | 3,220.75 | |
| Warren | | 4,029.36 | | 4,029.36 | 1,396.58 | 1,394.00 | 1,013.00 | 225.78 | 4,029.36 | |
| Webster | | 2,402.60 | | 2,402.60 | 601.30 | 1,225 00 | 545.00 | 31.30 | 2,402.60 | |
| Winnebago—Buffalo Center district | 54.71 | 1,032.92 | | 1,087.63 | 282.03 | 352.50 | 241.75 | 211.35 | 1,087,63 | 1,400.00 |
| Winnebago—Forest City district | | 1,551.97 | | 1,551.97 | 773.25 | | 209.50 | 569.22 | 1,551,97 | |
| Winneshiek | 38.63 | 2,170.49 | | 2,209.12 | 1,331.10 | 303.00 | 528.32 | 46.70 | 2,209.12 | 400.00 |
| Worth | 22.51 | 940.16 | | 962.67 | 260.64 | 250.00 | 382.80 | 69.23 | 962.67 | |
| Wright | | 1,922.44 | 1,075.74 | 2,998.19 | 2,401.93 | 125.00 | 471.25 | | 2,998.18 | 2,000.00 |
| Totals | $5,210.64 | $252,022.75 | $7,174.78 | $264,408.17 | $114,689.38 | $ 82,175.43 | $ 54,326.08 | $ 13,217.28 | $264,408 17 | $91,325.89 |

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